全世界功率半導體資料手冊

DATA

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DATA

全華科技圖書公司印行

編輯大意與程序

目　的

本書編輯目的在於廣泛報導全世界功率半導體界目前製造之情形。此類之書或將無法包羅讀者所需之全部資料，但本書確可提供讀者於設計之際選用適當型式及其製造廠商。

技術資料之獲取

本書資料皆係由參與製造廠商通力合作，提供最新技術資料，再由本刊分類編輯而成。製造廠商提供該等資料均未索取任何報酬。

JEDEC型號

標準1N，2N，3N 型號中所列電氣、機械及環境等特性，皆直接由JEDEC註册登記發表而來。此等註册製造廠商藉型號對照表中製造廠商代號後之符號加以表示。一般而言，JEDEC也標有不同廠商製造之型號，不論是否已登記，只要規格相符即可，唯仍有少數例外，讀者不妨逕與製造廠商洽詢。

軍用型號

在技術欄內，軍用型號所列電氣、機械及環境等特性均直接自合格軍用規格與標準中求得。每一型號之合格製造廠商則係來自QPL（合格零件表）或QTL（合格檢驗函）。

代用型號與共同性

本書雖非專爲提供互換表而作，但由於編列安排，技術欄內所選列特性中，性質相同或相近者均集中一起。此種編排方式，使代用或互換零件更臻完善便捷及安全。

價格與可用性

鑑於電子工業具有複雜且變化快速之特性，最新價格及交貨資料皆需與製造廠商洽詢。本書後頁所列製造廠商及當地辦公室一欄，將可提供此項協助。

製造廠商之規格

本書包括最新製作之組件，組件之主要特性、圖形及製造廠商。所載內容，盡力確保其正確，唯錯誤與疏漏之處，仍所難免。最新之價格與完整之技術細節，需由製造廠商或其代理店方能提供。

如何使本書發揮最大效用

爲使本書發揮最大效用，請在下面方框中選擇與您自身的已知—未知狀況相同的問題，再依文中的指示加以解決。

1.	已知：電機與機械方面的要求 未知：適合的型號 指示： a. 翻至首頁目錄表，選擇與元件型式有關的技術數據欄。 b. 翻到所選欄內的任一頁，注意每頁上角所示的編列參數（亦即數據中所列各特性）。 c. 應用編列參數，定出合於所求的一般性型號（由於編列安排的關係，此等型式將成群的出現）再由此中選取最合適者。 d. 如欲查明所選型號的製造廠商，請遵循下面(2)號方框的指示。
2.	已知：型號（TIP 41，C 126M） 未知：製造廠商，地址與辦公室 指示： a. 翻至型號對照表（第一欄）定出型號。（請參照"型號對照表中，型號編列方法"） b. 注意代表製造廠商的三或四個英文字母代號（Codes）。如TII，GESY，即表不同型式的製造廠商代號。 c. 應用書後的"製造廠商與其代號"（Manufacturers & Their Codes），查出此代號的廠商。 （注意：製造商在美國辦公室，均以黑體字印在表中，再由書後一特別欄中，即可以查明）。
3.	已知：型號（40DNH120） 未知：電氣特性及／或外觀圖 a. 翻至"型號對照表"，定出其型號。 b. 注意頁數與行數，如157-56。 c. 在技術欄內定出型號。 （注意：每一型號中與電氣及性能特性相並列的，爲外觀參改考，其形狀可由27欄中查出）
4.	已知：型號 未知：可供取代的等效型號 指示： a. 遵循(3)號方框的指示。 b. 觀察已知型號四周各型號，以決定最適當者加以取代或互換。
5.	已知：軍用要求 未知：適合的型號 指示： a. 遵循(1)號方框的指示，決定適合軍用要求的一般型號，再由標明有（JAN）字首中選用軍用型式。 b. 如欲查明製造廠商，則請依照號方框(6)的指示。
6.	已知：軍用型號 未知：合格製造廠商，及合用的軍用規格。 指示： a. 翻至26欄（美國軍用規格型式），定出型號（型號係依字母——數字順序排列） b. 注意製造廠商代號，及列在型號後的詳細規格。（較一般性規格詳盡的詳細規格，係表列在詳細規格一行內，使元件的軍用規格得以完全。） c. 請利用書後的"製造廠商及其代號"（Manufacturers & Their Codes）查出製造廠商代號。

技術欄內十的倍數，符號與編碼之應用

爲能在最小的空間內，展示最大量的資料，本書中的數據應用了下列的修改工具：

以下所示的十乘冪倍數係用在數字行中，當所測數值比行首所示的單位大甚多或小甚多時，即應用之，通常此等單位稱爲基本單位。如V（電壓），A（安培），S（秒）等。此等倍數及其解釋如下：

倍　數

表示十的乘冪(powers)的字首(prefixes)與符號(symbols)（由國際度量衡委員會提供，經美國國家標準局認可）

乘冪	字首	符號	乘冪	字首	符號	乘冪	字母	符號
10^{12}	tetra	T	10	deka	da	10^{-9}	nano	n
10^{9}	giga	G	10^{-1}	deci	d	10^{-12}	pico	p
10^{6}	mega	M	10^{-2}	centi	c	10^{-15}	femto	f
10^{3}	kilo	k	10^{-3}	milli	m	10^{-18}	atto	a
10^{2}	hecto	h	10^{-6}	micro	μ	10		

解　釋

數據的數值	行首基本單位	實際表示數值
3毫安	A（安培）	3.0m
9仟歐	Ω（歐姆）	9.0M
0.5伏	V（伏特）	500m*
10安	A（安培）	10

* 也可以寫成爲0.5而不加任何倍數

符號與編碼

符號：在每一行中數字或其他地方，當數據數值與行首所示有所不同時，即當應用如#，△與S等符號，例如，當某一行首標明爲最大電功率（瓦）（Max. Power）時，若某一型式的數據爲最小電功率值則此中變化即需以一特別符號加在數值前面以作標識之用。

注意：本書所用的符號與編碼均在書後卡片中加以說明。

編碼：在某些行中，應用編碼以將數據加以簡化，此等編碼可以是字母（A.B.C等）數字（1 2 3 等）或二者的組合

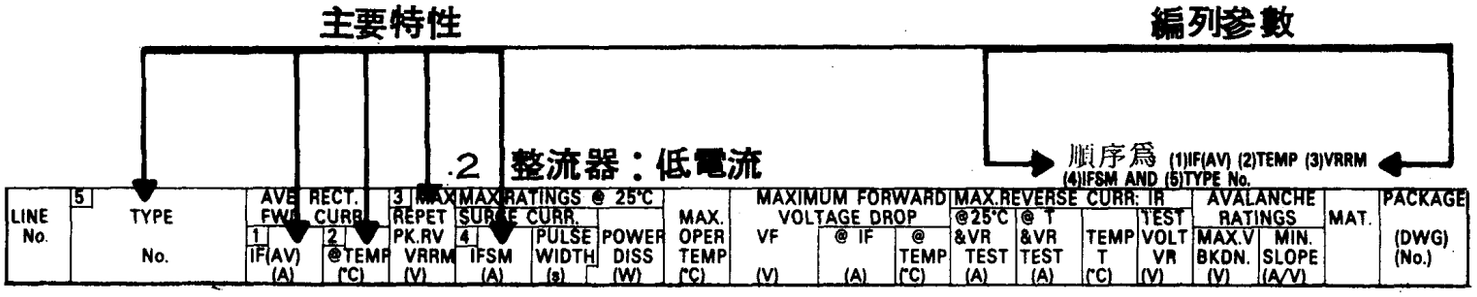
在型號對照表(Type No. Cross-Index)中型號編列方法

型號對照表中的型號編列依下列規則而排：

	例
規則：1）型號係按數字－字母順序而排列，即以數字開始（小數，分數或整數）的型號排在以英文字母開頭的型號前面。	13A01 143 1202 A147 AN127 B20000
2）小數及分數在整個數字前。若剩下的型號相同，則以小數開頭的型號排列分數開頭的型號前面。	25 Z 150 ¼ Z 150 ¾M 12 Z 1 T 3
3）一般編列時，零皆予忽略，但若零爲唯一區分二種型號的基數時例外，此種情況下含零的型號需將置於首位。	0112 112 0113 00115 AP01 AP1 AP02
4）集中在連號（－）或斜劃（／）前的字母，爲編列時的控制因數（Controlling Factors）。以相同數字／字母開頭而在其後爲連號或斜劃的型號是排在相同位置爲字母的型號前面。	66-0706 66M1 70/10 70A9
5）軍用字首（JAN）在型號數字－字母編列時均予忽略，軍用型號直接遵循JEDEC等效型號。	2N645 JAN2N645

如何使本書發揮最大效用

在技術欄中，型號的安排主要係由每欄內所列的一般特性中，選擇出特別重要者。這些選出的特性即爲編列參數，在每一欄中編列參數均不同，可由每一頁上角加以查明。下例即可協助讀者明瞭。



每一欄內不同型式，係由第一個編列參數，依數字或字母的順序加以排列。若有一群第一參數相同的型式，即由其第二個參數的順序來安排。此種情況一直延續到最後一個參數爲止，在每一例中，此數字即爲型號本身。型號安排的最後一步是採取和型號對照表中相同的方法以與型號順序相符，如前文中所述。

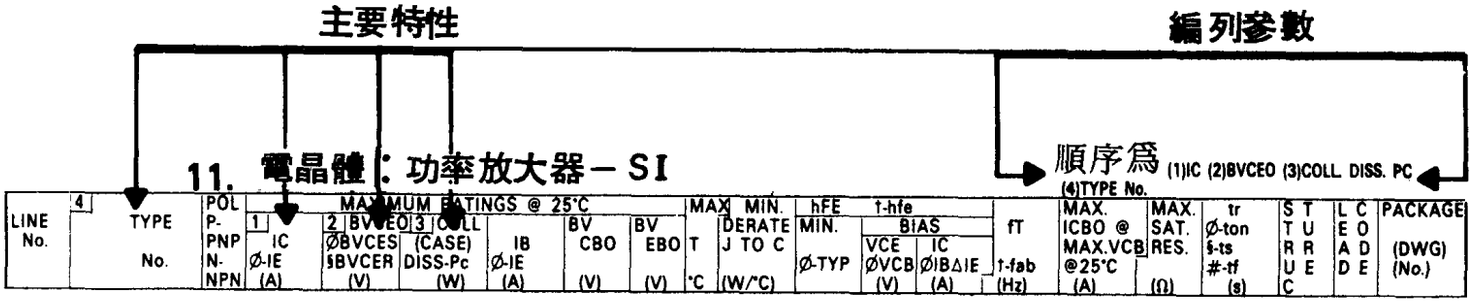
下圖所示爲一經簡化後的排列模式。

4 型號	特性			
	1 A	2 B	C	3 D
A13	100		325	
A4	100		1000	20
A9	100	A	20	25
A10	100	A	200	25
A3	100	B	40	15
A1	100	C	80	10
A8	100	C	900	15
A7	100	D	35	30
A11	110	A	60	25
A2	120	A	300	15
A5	120	B	150	20
A6	120	B	200	20
A12	120	B	475	25
最後編列參數	第一編列參數	第二編列參數	並未編列	第三編列參數

注意在任一編列參數中若缺少一項均視爲零，并編列在有實際數值的項之前。

HOW TYPE NOS. ARE ARRANGED IN THE TECHNICAL SECTION – SEQUENCING PARAMETERS

在技術欄中，型號的安排主要係由每欄內所列的一般性中，選擇出特別重要者。這些選出的特性即爲編列參數，在每一欄中編列參數均不同，可由每一頁上角加以查明。下例即可協助讀者明瞭。



每一欄內不同型式，係由第一個編列參數，依數字或字母的順序加以排列。若有一群第一參數相同的型式，即由其第二個參數的順序來安排。此種情況一直延續到最後一個參數爲止，在每一例中，此數字即爲型號本身。型號安排的最後一步是採取和型號對照表中相同的方法以與型號順序相符，如前文中所述。

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A10	100	A	200	25
A3	100	B	40	15
A1	100	C	80	10
A8	100	C	900	15
A7	100	D	35	30
A1	110	A	60	25
A2	120	A	300	15
A5	120	B	150	20
A6	120	B	200	20
A12	120	B	475	25

最後編列參數　第一編列參數　第二編列參數　並未編列　第三編列參數

注意在任一編列參數中若缺少一項則視爲零，并編列在有實際數值的項之前。

DEFINITIONS AND INTERPRETATIONS

POWER SEMICONDUCTORS as interpreted by D.A.T.A., consist of Diodes, Transistors and Thyristors which fall within the stated ranges of current and wattage. The ranges used represent a consensus from users, manufacturers and technical information agencies, presented by D.A.T.A. for the purpose of highlighting the increasing use of semiconductor devices in high-current, high-power applications. This then is D.A.T.A.'s interpretation of Power Semiconductors. D.A.T.A. expects and welcomes comments and suggestions designed to improve this power presentation for the user and for the participating manufacturers. Every effort will be made to incorporate suggestions in future editions.

Device types listed in the POWER SEMICONDUCTOR D.A.T.A.BOOK® are defined below:

RECTIFIER: A two-terminal device with a reverse-blocking voltage current characteristic.

FAST-RECOVERY RECTIFIER: A two-terminal, reverse-blocking device, with a relatively short recovery time when suddenly biased from a forward (conducting) to a reverse (blocking) state.

ZENER DIODE: A two-terminal voltage regulator with an essentially constant terminal voltage over its operating current range in the breakdown region.

AMPLIFIER TRANSISTOR: A three-terminal, two-junction NPN or PNP device used to provide power amplification.

SWITCHING TRANSISTOR: An amplifier transistor with relatively high frequency power control rate when switched between its voltage-saturation region and its current-cutoff region.

SILICON CONTROLLED RECTIFIER (SCR): A three-terminal, four-layer reverse-blocking thyristor, gated with a positive voltage (P-gate).

FAST-SWITCHING SCR: A three-terminal, four-layer reverse-blocking SCR with relatively fast turn-off time (commutation speed).

TRIAC: A three-terminal, multi-layer, bidirectional thyristor with four-quadrant gate turn-on capability (gate voltage positive or negative relative to main terminal 1).

MISCELLANEOUS POWER THYRISTORS:

N-GATE THYRISTOR: A three-terminal,multi-layer, reverse-blocking thyristor, gated with a negative voltage. Distributed amplified gates are included in the category because of their negative gate voltage requirements.

REVERSE CONDUCTING THYRISTOR: A three-terminal, multi-layer, reverse-conducting thyristor, gated with a positive voltage and conducting large currents in the reverse direction.

DEFINITIONS AND INTERPRETATIONS (Cont'd)

Device types listed in the POWER SEMICONDUCTOR D.A.T.A.BOOK with ranges of primary characteristics and ratings are shown below:

DEVICE TYPE	RANGES OF CHARACTERISTICS & RATINGS INCLUDED		
Rectifiers	Low Current	10 to 49 Amps	$I_{F\ (AV)}$
	Medium Current	50 to 199 Amps	$I_{F\ (AV)}$
	High Current	$\geqslant$ 200 Amps	$I_{F\ (AV)}$
Fast Recovery Rectifiers	$\geqslant$ 10 Amps	$I_{F\ (AV)}$	
	t_{rr} range	10 nsec to 10 μsec	
Power Zeners	$\geqslant$ 10 Watts	Max. Dissipation	
Transistors	Power Amplifiers-Germanium		$\geqslant$ 1 Amp Ic, 50 Watts Pc, 450 mw/^{o}C
	Power Amplifiers-Silicon		$\geqslant$ 1 Amp Ic, 50 Watts Pc, 450 mw/^{o}C
	Power Switching		$\geqslant$ 1 Amp Ic, 50 Watts Pc, 450 mw/^{o}C
	Power Darlington		$\geqslant$ 1 Amp Ic, 50 Watts Pc, 450 mw/^{o}C f_T up to 400 MH_z
SCRs	Low Current	10 to 49 Amps	$I_{T(RMS)}$
	Medium Current	50 to 199 Amps	$I_{T(RMS)}$
	High Current	$\geqslant$ 200 Amps	$I_{T(RMS)}$
Fast-Switching SCRs	$\geqslant$ 10 Amps	$I_{T(RMS)}$	
	t_q in the range of	50 μsec max.	
Triacs	$\geqslant$ 10 Amps	$I_{T(RMS)}$	
Miscellaneous Power Thyristors	$\geqslant$ 10 Amps	$I_{T(RMS)}$	

EXPLANATIONS OF CHARACTERISTICS AND RATINGS

RECTIFIERS, ZENERS: The characteristics and ratings shown are generally for the worst-case condition. This approach allows the reader to compare and select devices whose characteristics are stated to be under maximum operating conditions. In general, characteristics and ratings are measured at a temperature of 25°C.

A/V – Slope of Volt-Amp characteristic of avalanche rectifiers at breakdown (A/V)

C_j – Diode junction capacitance (Farad)

di/dt – Rate of reversal of device current (Amp/μSec)

I_F – Forward DC current (Amp)

$I_{F\ (AV)}$ – Average forward DC current (Amp)

I_{FSM} – Maximum forward surge current (Amp)

I_R – Reverse current (Amp)

$I_{RM\ (REC)}$ – Maximum (Peak) reverse recovery current (Amp)

I_{rr} – Reverse recovery current to which trr is measured (Amp)

I_Z – Reference diode current at breakdown (Amp)

I_{ZT} – Test current at which reference voltage is measured for reference diodes (Amp)

P_F – Forward power dissipation (Watt)

P_R – Reverse power dissipation (Watt)

Q_s – Stored charge during recovery (Coul) $Q_s = \int_0^{trr} i_r dt$

R_L – Circuit load resistance (Ohm)

T – Device operating temperature for test mode (°C)

T_c – Temperature coefficient of voltage for reference diode (Volt/°C)

t_p – Pulse width (duration) of applied current or voltage (Sec)

t_{fr} – Forward recovery time (Sec)

trr – Reverse recovery time (Sec)

T_{max} – Maximum operating temperature of device (°C)

V_F – Forward DC voltage (Volt)

$V_{R(TEST)}$ – Reverse voltage at which I_R is measured (Volt)

V_{RRM} – Maximum reverse repetitive voltage (Volt)

V_Z – Voltage across a reference diode at breakdown (Volt)

Z_R – Reverse circuit impedance during recovery period (Ohm)

Z_Z – Small signal dynamic impedance of a reference diode at breakdown (Ohm)

EXPLANATIONS OF CHARACTERISTICS AND RATINGS (Cont'd)

TRANSISTORS: The characteristics and ratings shown are generally for the worst-case condition. This approach allows the reader to compare and select devices whose characteristics are stated to be under maximum operating conditions. In general, characteristics and ratings are measured at a temperature of 25°C.

BV_{CBO} / $V_{(BR)CBO}$ – Breakdown voltage, collector-to-base; emitter open-circuit. (Volt)

BV_{CEO} / $V_{(BR)CEO}$ – Breakdown voltage, collector-to-emitter; base open-circuit. (Volt)

BV_{CER} / $V_{(BR)CER}$ – Breakdown voltage, collector-to-emitter; with specified base-to-emitter resistance. (Volt)

BV_{CES} / $V_{(BR)CES}$ – Breakdown voltage, collector-to-emitter; with base short-circuit to emitter. (Volt)

BV_{CEX} / $V_{(BR)CEX}$ – Breakdown voltage, collector-to-emitter; with specified circuit between base and emitter. (Volt)

BV_{EBO} / $V_{(BR)EBO}$ – Breakdown voltage, emitter-to-base; collector open-circuit. (Volt)

C_{ob} – Output capacitance with input AC open-circuit, common base. (Farad)

f_{a_b} / f_{hfb} – Small-signal short-circuit forward current transfer ratio cut-off frequency, common base (alpha cut-off frequency). (Hz)

f_{a_e} / f_{hfe} – Small-signal short-circuit forward current transfer ratio cut-off frequency, common emitter (beta cut-off frequency). (Hz)

f_T – Extrapolated unity gain frequency (gain bandwidth product). Product of the common-emitter current transfer ratio and the frequency of measurement at a frequency where the current gain is decreasing at the rate of 6 db per octave. This frequency is also known as the Transition Frequency. (Hz)

h_{FE} – DC forward current transfer ratio, common emitter.

h_{fe} – Small signal forward current transfer ratio, common emitter.

h_{ib} – Small signal value of the short-circuit input impedance, common base. (Ohm)

h_{ie} – Small signal value of the short-circuit input impedance, common emitter. (Ohm)

h_{ob} – Small signal value of the open-circuit output admittance, common base. (mho)

h_{oe} – Small signal value of the open-circuit output admittance, common emitter. (mho)

h_{rb} – Small signal value of the open-circuit reverse voltage transfer ratio, common base.

h_{re} – Small signal value of the open-circuit reverse voltage transfer ratio, common emitter.

I_B – Base current, DC. (Amp)

$I_{B(Sat)}$ – Base saturation current. (Amp)

I_C – Collector current, DC. (Amp)

$I_{C(Sat)}$ – Collector saturation current. (Amp)

I_{CBO} – Collector cut-off current, DC, emitter open-circuit. (Amp)

I_{CES} – Collector cut-off current, DC, with base shorted to emitter. (Amp)

I_{CEX} – Collector cut-off current, DC, with specified circuit between base and emitter. (Amp)

$I_{P(3)}$ – Third order intercept point.

NF – Noise factor or noise figure.(db)

λ_s – Wave length of maximum sensitivity. (Meter)

P_c – Collector power dissipation. (Watt)

P_d – Power dissipation. (Watt)

P_o – Power output. (Watt)

P_{o1db} – Power output at 1.0 db compression point. (Watt)

P_T – Total power dissipatoin (Watt)

R_{BBO} – Interbase resistance, with emitter open circuit. Ohm)

t_d – Delay time. (Sec.)

t_f – Fall time. (Sec.)

t_{off} – Turn-off time = $t_s + t_f$. (Sec.)

t_{on} – Turn-on time = $t_d + t_r$. (Sec.)

t_r – Rise time. (Sec.)

t_s – Storage time. (Sec.)

V_{BE} – Base-to-emitter voltage, DC. (Volt)

$V_{BE(Sat)}$ – Base-to-emitter saturation voltage. (Volt)

V_{CB} – Collector-to-base voltage, DC. (Volt)

V_{CBO} – Collector-to-base voltage, DC, emitter open. (Volt)

V_{cc} – Supply voltage. (Volt)

V_{CE} – Collector-to-emitter voltage, DC. (Volt)

$V_{CE(Sat)}$ – Collector-to-emitter saturation voltage. (Volt)

V_{CEO} – Collector-to-emitter voltage, DC, base open. (Volt)

V_{EBO} – Emitter-to-base voltage, DC, collector open. (Volt)

V_{off} – Offset voltage. (Volt)

Y_{FE} – DC forward transmittance with output short-circuit. (mho)

EXPLANATIONS OF CHARACTERISTICS AND RATINGS (Cont'd)

SCR, TRIACS & MISCELLANEOUS POWER THYRISTORS: The characteristics and ratings shown are generally for the worst-case condition. This approach allows the reader to compare and select devices whose characteristics are stated to be under maximum operating conditions. In general, characteristics and ratings are measured at a temperature of 25°C. The only exception is V_{DRM} (maximum repetitive off-state voltage) which is given over the operating temperature range.

di/dt (RATING): critical rate of rise of on-state current (Amp/μsec)

dv/dt (COMMUTATING): critical rate of rise of commutating voltage (Volt/sec)

dv/dt (STATIC): critical rate of rise of off-state voltage (Volt/sec)

I_{CT}: N-gate trigger current (Amp)

I_D @ T_{ref} @ V_{DRM}: Off-state-current (Amp)

I_{GO}: Gate Turn-off current (Amp)

I_{GT}: Gate trigger current (Amp)

I_H: Holding current (Amp)

I_L: Latching current (Amp)

I_R: Reverse current (Amp)

I_S @ V_S: Switching current (Amp)

I_T @ T_{ref}: Static on-state current (Amp)

$I_{T(AV)}$ @ T_{ref}: The average sinewave on-state current (Amp)

I_{TRM}: Maximum repetitive on-state current (Amp)

$I_{T(RMS)}$ @ T_{ref}: RMS on-state current (Amp)

I_{TSM}: Surge current (Amp)

t_{gt}: Gate-controlled turn-on time (Sec)

t_{on}: Switching turn-on time (Sec)

t_q: Circuit-Commutated turn-off time (Sec)

V_{CT}: N-gate trigger voltage (Volt)

V_D: DC blocking volts (Volt)

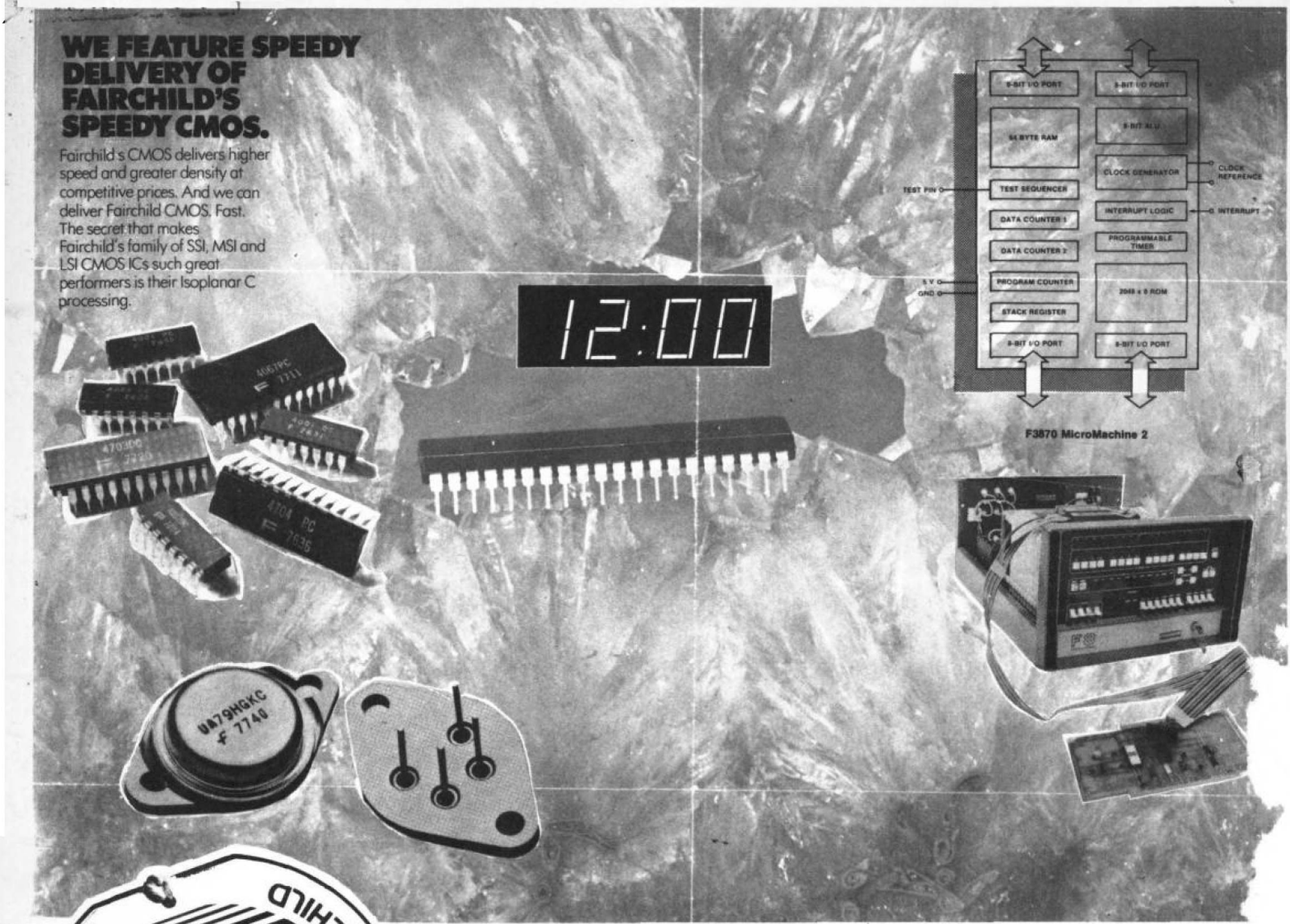
V_{DRM}: Repetitive peak off-state voltage (Volt)

V_{GQ}: Gate turn-off voltage (Volt)

V_{GT}: Gate trigger voltage (Volt)

V_{RRM}: Max. reverse repetitive voltage (Volt)

V_T @ I_T: On-state voltage (Volt)



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（按筆劃順序排序）

THYRISTOR (Cont'd)

SYMBOLS AND CODES EXPLAINED (INTERPRETER)

25. MISCELLANEOUS POWER THYRISTORS

IN ORDER OF (1)USE CODE (2)MAX. IT(RMS) (3)TEMP. (4)VDRM (5)ITSM AND (6)TYPE No.

LINE No.	6 TYPE No.	1 USE CODE	2 MAX. RMS ON-ST CURR. IT (RMS) (A)	3 @ TEMP (°C)	4 MAX. REP.OFF ST.VOLT VDRM (V)	5 SURGE CURR. ITSM (A)	MAX. GATE CHARACTER. IGT (A)	VGT (V)	MAX. ON-ST. VOLTAGE VT (V)	@ IT (A)	MAX. HOLD. CURR. IH (A)	MAX.OFF-ST CURRENT ID @ VDRM (A)	@ TEMP (°C)	TYP. SW. TIME tgt (s)	OPER TEMP RNG. CODE - +	GENERAL DESCRIPTION	LEAD CODE	PACKAGE (DWG) (No.)
•	•	▼ 1	2	•	3	4	5		6	7	•	8	•	9	•	10	•	•

1

RCT – Reverse-conducting triode

2

Δ – I_T

3

* – V_{AG}: Anode-to-gate voltage
Δ – V_D: dc blocking voltage
☑ – At $V_{GT} \leq 0$
∅ – With R_{GK} in circuit

4

Note: Given for one-half cycle of sinewave at 60 H_z (or 50 H_z for non-U.S. types) unless otherwise indicated.
A – Pulse; Width < 1.0 us
B – Pulse; Width 1.0 us to 10 us
C – Pulse; Width 10 us to 100 us
D – Pulse; Width 0.1 ms to 1.0 ms
E – Pulse; Width > 1.0 ms
Δ – Applies over entire operating temp. range
§ – At T > 25°C

5

Note: Values are negative for N-Gate devices
† – Typical value
§ – At T > 25°C
$ – At T < 25°C
☑ – Pulsed

6

† – Typical value
§ – At T > 25°C
$ – At T < 25°C
☑ – Pulsed

7

† – Pulsed

8

♦ – At V < V_{DRM}
∅ – One cycle avg.

9

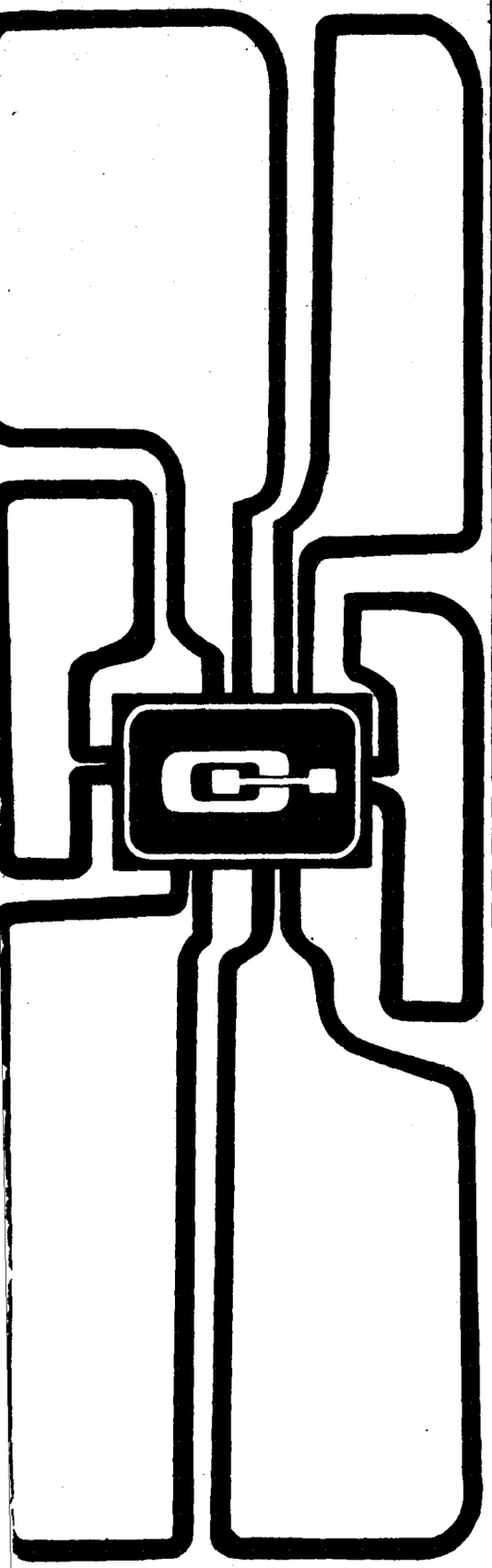
☑ – Max. value
§ – At T > 25°C
# – t_d: gate-controlled delay time
♦ – Max. non-repetitive di/dt, in A/us
Δ – Typ. turn-off time

10

Note: For abbreviations, see Glossary in front of book.

• See Symbols and Codes Common To More than One Section at Top of Page PW-5

▼ See Type No. Symbols and Codes At Top of Page PW-5



全世界功率半導體資料手冊

目錄

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1. TYPE No. CROSS INDEX

IN TYPE NUMBER SEQUENCE

TYPE No.	MFRS	Pg&Line
1N248	CEN	116-109
	CSR	
	EDL	
	ESI	
	ETC	
	FMC	♦GESY
	IDC	INR
	INRB	INRI
	INRJ	ITT
	SAR	SES
	SPE	SSI
	TRW	UPI
		WESY
1N248A	CEN	129 - 70
	CRI	CSR
	DPI	EDL
	ETC	FMC
	♦GESY	IDC
	IDI	INR
	INRB	INRI
	INRJ	ITT
	SAR	SES
	SPE	SSI
	SST	TRW
		WESY
1N248B	CEN	129 - 71
	CRI	CSR
	DPI	EDL
	ETC	FMC
	♦GESY	IDC
	IDI	INR
	INRB	INRI
	INRJ	ITT
	MISI	♦MOTA
	NPC	SAR
	♦SLD	SPE
	SSCF	♦SSI
	SST	♦THCF
	TRW	WESY
1N248C	Δ♦RCA	124 - 34
	CEN	CSR
	DPI	EDL
	ETC	FMC
	♦GESY	IDC
	IDI	INR
	INRB	INRI
	INRJ	ITT
	♦MOTA	SAR
	SCN	SPE
	♦SSI	TRW
	UPI	WESY
1N249	CEN	117 - 2
	CRI	CSR
	EDL	ETC
	FMC	♦GESY
	IDC	INR
	INRB	INRI
	INRJ	ITT
	SAR	SES
	SPE	SSI
	TRW	UPI
		WESY
1N249A	CEN	129 - 72
	CRI	CSR
	DPI	EDL
	ETC	FMC
	♦GESY	IDC
	IDI	INR
	INRB	INRI
	INRJ	ITT
	SAR	SES
	SPE	SSI
	SST	TRW
		WESY
1N249B	CEN	129 - 74
	CSR	DPI
	EDL	ESI
	ETC	FMC
	♦GESY	IDC
	IDI	INR
	INRB	INRI
	INRJ	ITT
	MISI	♦MOTA
	NPC	SAR
	♦SLD	SPE
	SSCF	♦SSI
	SST	♦THCF
	TRW	WESY
1N249C	Δ♦RCA	124 - 37
	CEN	CSR
	DPI	EDL
	ETC	FMC
	♦GESY	IDC
	IDI	INR
	INRB	INRI
	INRJ	ITT
	♦MOTA	SAR
	SCN	SPE
	♦SSI	TRW
	UPI	WESY
1N250	CEN	117 - 6
	CRI	CSR
	EDL	ETC
	FMC	♦GESY
	IDC	INR
	INRB	INRI
	INRJ	ITT
	SAR	SES
	SPE	SSI
	TRW	UPI
		WESY
1N250A	CEN	129 - 76
	CRI	CSR
	DPI	EDL
	ETC	FMC
cont.next col.		

TYPE No.	MFRS	Pg&Line
1N250A (cont.)	♦GESY	
	IDC	IDI
	INR	INRB
	INRI	INRJ
	ITT	SAR
	SES	SPE
	SSI	SST
	TRW	WESY
1N250B	CEN	129 - 77
	CRI	CSR
	DPI	EDL
	ESI	ETC
	FMC	♦GESY
	IDC	IDI
	INR	INRB
	INRI	INRJ
	ITT	MISI
	♦MOTA	NPC
	SAR	♦SLD
	SPE	SSCF
	♦SSI	SST
	♦THCF	TRW
		WESY
1N250C	Δ♦RCA	124 - 40
	CEN	CRI
	CSR	DPI
	EDL	ETC
	FMC	♦GESY
	IDC	IDI
	INR	INRB
	INRI	INRJ
	ITT	♦MOTA
	SAR	SCN
	SPE	♦SSI
	TRW	WESY
1N411B	CRI	133 - 43
	EDL	FMC
	IDC	ITT
	SAR	SES
		SPE
1N412B	CRI	133 - 44
	EDL	FMC
	ITT	SAR
	SES	SPE
1N413B	CRI	133 - 45
	EDL	FMC
	ITT	SAR
	SES	SPE
1N1076	Δ♦SAR	121 - 19
	CEN	CSR
		SSI
1N1077	Δ♦SAR	121 - 20
	CEN	CSR
1N1078	Δ♦SAR	121 - 23
	CEN	CSR
1N1079	Δ♦SAR	121 - 25
	CEN	CSR
1N1080	Δ♦SAR	121 - 28
	CEN	CSR
1N1183	Δ♦WESY	129 - 8
	CEN	CSR
	DPI	EDL
	ETC	FMC
	♦GESY	IDI
	♦INR	INRB
	INRI	INRJ
	♦MOTA	NAE
	SAR	SCN
	SES	♦SLD
	SOD	SPE
	SRD	SSCF
	♦SSI	SST
	STM	TRW
1N1183A	CEN	131 - 56
	CSR	DPI
	EDL	FMC
	IDC	IDI
	♦INR	MOTA
	NAE	NASB
	♦RCA	SAR
	SCN	SPE
	SSI	SST
	STM	WESY
1N1183T	SSCF	131 - 35
1N1184	Δ♦WESY	129 - 10
	CEN	CRI
	CSR	DPI
	EDL	ESI
	ETC	FMC
	♦GESY	IDI
	♦INR	INRB
	INRI	INRJ
	MISI	♦MOTA
	NAE	NPC
	♦SAR	SCN
	SES	♦SLD
	SOD	SPE
	SRD	SSCF
	♦SSI	STM
	THCF	TRW
JAN1N1184	GESY	129 - 42
	NAE	
1N1184A	CEN	131 - 59
	CSR	DPI
	EDL	ETC
	FMC	IDC
	IDI	♦INR
	INRB	INRI
	INRJ	MOTA
	NAE	NASB
	♦RCA	♦SAR
	SCN	SSI
cont.next col.		

TYPE No.	MFRS	Pg&Line
1N1184A (cont.)	SST	
	STM	WESY
JAN1N1184R	GESY	129 - 43
	NAE	
1N1184T	SSCF	131 - 37
1N1185	Δ♦WESY	129 - 12
	CEN	CSR
	DPI	EDL
	ETC	FMC
	♦GESY	IDI
	♦INR	INRB
	INRI	INRJ
	♦MOTA	NAE
	SAR	SCN
	SES	SOD
	SPE	SRD
	♦SSI	STM
		TRW
1N1185A	CEN	131 - 62
	CSR	DPI
	EDL	FMC
	IDC	IDI
	♦INR	INRB
	INRI	INRJ
	MOTA	NAE
	SAR	SCN
	SPE	SSI
	STM	WESY
1N1186	Δ♦WESY	129 - 14
	CEN	CSR
	DPI	EDL
	ETC	FMC
	♦GESY	IDI
	♦INR	INRB
	INRI	INRJ
	MISI	♦MOTA
	NAE	NPC
	♦SAR	SCN
	SES	♦SLD
	SOD	SPE
	SRD	SSCF
	♦SSI	SST
	STM	THCF
		TRW
JAN1N1186	GESY	129 - 44
	NAE	
1N1186A	CEN	131 - 63
	CSR	DPI
	EDL	ESI
	ETC	FMC
	IDC	IDI
	♦INR	INRB
	INRI	INRJ
	MOTA	NAE
	♦RCA	♦SAR
	SCN	SPE
	SSI	SST
	STM	WESY
JAN1N1186R	GESY	129 - 45
	NAE	
1N1186T	SSCF	131 - 40
1N1187	Δ♦WESY	129 - 17
	CEN	CSR
	DPI	EDL
	ETC	FMC
	♦GESY	IDI
	♦INR	INRB
	INRI	INRJ
	♦MOTA	NAE
	♦SAR	SCN
	SES	♦SLD
	SOD	SPE
	SRD	SSCF
	♦SSI	SST
	STM	TRW
1N1187A	Δ♦RCA	131 - 69
	CEN	CSR
	DPI	EDL
	ETC	FMC
	IDC	IDI
	♦INR	INRB
	INRI	INRJ
	MOTA	♦SAR
	SCN	SSI
	SST	STM
		WESY
1N1187T	SSCF	131 - 42
1N1188	Δ♦WESY	129 - 19
	CEN	CSR
	DPI	EDL
	ESI	ETC
	FMC	♦GESY
	IDI	♦INR
	INRB	INRI
	INRJ	MISI
	♦MOTA	NAE
	NPC	♦SAR
	SCN	SES
	♦SLD	SOD
	SPE	SRD
	SSCF	♦SSI
	SST	STM
	THCF	TRW
JAN1N1188	GESY	129 - 46
	NAE	
1N1188A	Δ♦RCA	131 - 73
	CEN	CSR
	DPI	EDL
	ETC	FMC
	IDC	IDI
	♦INR	INRB
	INRI	INRJ
cont.next col.		

TYPE No.	MFRS	Pg&Line
1N1188A (cont.)	MOTA	
	NAE	NASB
	♦SAR	SCN
	SPE	SSI
	SST	STM
		WESY
JAN1N1188R	GESY	129 - 47
	NAE	
1N1188T	SSCF	131 - 44
1N1189	Δ♦WESY	129 - 23
	CEN	CSR
	DPI	EDL
	ETC	FMC
	♦GESY	IDI
	♦INR	INRB
	INRI	INRJ
	♦MOTA	NAE
	♦SAR	SCN
	SES	♦SLD
	SOD	SPE
	SRD	SSCF
	♦SSI	SST
		STM
1N1189A	Δ♦RCA	131 - 77
	CEN	CSR
	DPI	EDL
	ETC	FMC
	IDC	IDI
	♦INR	INRB
	INRI	INRJ
	MOTA	NAE
	♦SAR	SCN
	SPE	SSI
	SST	STM
		WESY
1N1189T	SSCF	131 - 46
1N1190	Δ♦WESY	129 - 25
	CEN	CSR
	DPI	EDL
	ETC	FMC
	♦GESY	IDI
	♦INR	INRB
	INRI	INRJ
	MISI	♦MOTA
	NAE	NPC
	♦SAR	SCN
	SES	♦SLD
	SPE	SRD
	SSCF	♦SSI
	SST	STM
		THCF
JAN1N1190	GESY	129 - 48
	NAE	
1N1190A	Δ♦RCA	131 - 80
	CEN	CSR
	DPI	EDL
	ESI	FMC
	IDC	IDI
	♦INR	INRB
	INRI	INRJ
	MOTA	NAE
	NASB	♦SAR
	SCN	SPE
	SSI	SST
	STM	WESY
JAN1N1190R	GESY	129 - 49
	NAE	
1N1190T	SSCF	131 - 48
1N1191	Δ♦WESY	123 - 11
	CEN	CSR
	DPI	EDL
	ETC	FMC
	GESY	IDI
	INR	INRB
	INRI	INRJ
	♦MOTA	NAE
	SAR	SCN
	SES	♦SSI
1N1191A	CEN	124-108
	CSR	DPI
	EDL	ESI
	ETC	FMC
	IDC	IDI
	INR	INRB
	INRI	INRJ
	SAR	SCN
	SSI	UPI
		WESY
1N1192	Δ♦WESY	127 - 10
	CEN	CSR
	DPI	EDL
	ETC	FMC
	GESY	IDI
	INR	INRB
	INRI	INRJ
	♦MOTA	NAE
	SAR	SCN
	SES	SPE
		♦SSI
1N1192A	CEN	124-110
	CSR	DPI
	EDL	ESI
	ETC	FMC
	IDC	IDI
	INR	INRB
	INRI	INRJ
	SAR	SCN
	SSI	UPI
		WESY
1N1193	Δ♦WESY	127 - 16
	CEN	CSR
cont.next col.		

TYPE No.	MFRS	Pg&Line
1N1193 (cont.)	DPI	
	EDL	ETC
	FMC	GESY
	IDI	INR
	INRB	INRI
	INRJ	♦MOTA
	NAE	SAR
	SCN	SES
	SPE	♦SSI
1N1193A	CEN	125 - 2
	CSR	EDL
	ETC	FMC
	IDC	IDI
	INR	INRB
	INRI	INRJ
	SAR	SCN
	SSI	UPI
		WESY
1N1194	Δ♦WESY	127 - 17
	CEN	CSR
	DPI	EDL
	ETC	FMC
	GESY	IDI
	INR	INRB
	INRI	INRJ
	♦MOTA	NAE
	SAR	SCN
	SES	SPE
		♦SSI
1N1194A	CEN	125 - 3
	CSR	EDL
	ESI	ETC
	FMC	IDC
	IDI	INR
	INRB	INRI
	INRJ	SAR
	SCN	SSI
	UPI	WESY
1N1195	Δ♦WESY	127 - 23
	CEN	CSR
	DPI	EDL
	ETC	FMC
	GESY	IDI
	INR	INRB
	INRI	INRJ
	♦MOTA	NAE
	SAR	SES
	♦SLD	SPE
	♦SSI	SST
1N1195A	Δ♦RCA	124 - 42
	CEN	CSR
	DPI	EDL
	ETC	FMC
	♦GESY	IDC
	IDI	INR
	INRB	INRI
	INRJ	MISI
	♦MOTA	NPC
	SAR	SCN
	SSCF	♦SSI
	♦THCF	UPI
		WESY
1N1196	Δ♦WESY	127 - 26
	CEN	CSR
	DPI	EDL
	ETC	FMC
	GESY	IDI
	INR	INRB
	INRI	INRJ
	♦MOTA	NAE
	SAR	SES
	♦SLD	SPE
	♦SSI	SST
1N1196A	Δ♦RCA	124 - 46
	CEN	CSR
	DPI	EDL
	ESI	ETC
	FMC	♦GESY
	IDC	IDI
	INR	INRB
	INRI	INRJ
	MISI	♦MOTA
	NPC	SAR
	SCN	SSCF
	♦SSI	♦THCF
	UPI	WESY
1N1197	Δ♦WESY	127 - 32
	CEN	CSR
	DPI	EDL
	ETC	FMC
	GESY	IDI
	INR	INRB
	INRI	INRJ
	♦MOTA	NAE
	SAR	SES
	♦SLD	♦SSI
		SST
1N1197A	Δ♦RCA	124 - 50
	CEN	CSR
	DPI	EDL
	ETC	FMC
	♦GESY	IDC
	IDI	INR
	INRB	INRI
	INRJ	MISI
	♦MOTA	NPC
	SAR	SCN
	SPE	SSCF
	♦SSI	♦THCF
		WESY
1N1198	Δ♦WESY	127 - 35
	CEN	CRI
cont.next page		

Δ-Registered with JEDEC by this manufacturer

♦-Copy of mfr's data sheet may be ordered from D.A.T.A.

1. TYPE No. CROSS INDEX

IN TYPE NUMBER SEQUENCE

TYPE No.	MFRS	Pg&Line
1N1198		
(cont.)	CSR	
	DPI	EDL
	FMC	GESY
	IDI	INR
	INRB	INRI
	INRJ	♦MOTA
	NAE	SAR
	SES	♦SLD
	SPE	♦SSI
		SST
1N1198A	Δ♦RCA	124 - 53
	CEN	CSR
	DPI	EDL
	FMC	♦GESY
	IDC	IDI
	INR	INRB
	INRI	INRJ
	MISI	♦MOTA
	NPC	SAR
	SCN	SPE
	SSCF	♦SSI
	♦THCF	WESY
1N1199	ΔWESY	119 - 14
	CEN	CSR
	EDL	ETC
	FMC	GESY
	IDI	♦INR
	INRB	INRI
	INRJ	MOTA
	NAE	NASB
	SAR	SES
	SET	SOD
	SPE	SRD
	SSI	STM
		TRW
1N1199A	Δ♦GESY	119 - 15
	CEN	CSR
	EDL	ETC
	FMC	IDC
	IDI	♦INR
	INRB	INRI
	INRJ	♦MAL
	MOTA	NAE
	♦RCA	SAR
	SCN	SES
	SOD	SPE
	SSI	SST
	STM	TRW
	UPI	WESY
1N1199B	CEN	119 - 16
	CSR	EDL
	ESI	ETC
	IDC	IDI
	♦INR	INRB
	INRI	INRJ
	NAE	SAR
	SCN	SES
	SOD	SSI
	SST	STM
	TRW	UPI
		WESY
1N1200	ΔWESY	119 - 24
	CEN	CSR
	DIT	EDL
	ETC	FMC
	GESY	IDI
	♦INR	INRB
	INRI	INRJ
	MOTA	NAE
	NASB	♦SAR
	SES	SET
	SOD	SPE
	SRD	SSI
	STM	TRW
1N1200A	Δ♦GESY	119 - 25
	CEN	CSR
	DIT	EDL
	ESI	ETC
	FMC	IDC
	IDI	♦INR
	INRB	INRI
	INRJ	♦MAL
	MOTA	NAE
	♦RCA	SAR
	SCN	SES
	SOD	SPE
	SSI	SST
	STM	TRW
	UPI	WESY
1N1200B	CEN	119 - 26
	CSR	EDL
	ETC	IDC
	IDI	♦INR
	INRB	INRI
	INRJ	NAE
	SAR	SCN
	SES	SOD
	SSI	STM
	TRW	UPI
		WESY
1N1201	ΔWESY	119 - 34
	CEN	CSR
	DIT	EDL
	ETC	FMC
	GESY	IDI
	♦INR	INRB
	INRI	INRJ
	MOTA	NAE
	SAR	SES
	SET	SOD
	SRD	SSI
	STM	TRW

TYPE No.	MFRS	Pg&Line
1N1201A	Δ♦GESY	119 - 35
	CEN	CRI
	CSR	DIT
	EDL	ETC
	FMC	IDC
	IDI	♦INR
	INRB	INRI
	INRJ	♦MAL
	MOTA	NAE
	SAR	SCN
	SES	SOD
	SPE	SSI
	SST	STM
	TRW	UPI
		WESY
1N1201B	CEN	119 - 36
	CSR	EDL
	ETC	IDC
	IDI	♦INR
	INRB	INRI
	INRJ	NAE
	SAR	SCN
	SES	SOD
	SSI	SST
	STM	TRW
		WESY
1N1202	ΔWESY	119 - 38
	CEN	CSR
	DIT	EDL
	ETC	FMC
	GESY	IDI
	♦INR	INRB
	INRI	INRJ
	MOTA	NAE
	NASB	♦SAR
	SES	SET
	SOD	SRD
	SSI	STM
		TRW
1N1202A	Δ♦GESY	119 - 39
	CEN	CSR
	DIT	EDL
	ESI	ETC
	FMC	IDC
	IDI	♦INR
	INRB	INRI
	INRJ	♦MAL
	MOTA	NAE
	♦RCA	SAR
	SCN	SES
	SOD	SPE
	SSI	SST
	STM	TRW
	UPI	WESY
JAN1N1202A	GESY	119 - 48
	INR	NAE
1N1202B	CEN	119 - 40
	CSR	EDL
	ETC	IDC
	IDI	♦INR
	INRB	INRI
	INRJ	NAE
	SAR	SCN
	SES	SOD
	SSI	SST
	STM	TRW
	UPI	WESY
JAN1N1202RA	GESY	119 - 49
		NAE
1N1203	ΔWESY	119 - 52
	CEN	CSR
	DIT	EDL
	ETC	FMC
	GESY	IDI
	♦INR	INRB
	INRI	INRJ
	MOTA	NAE
	♦SAR	SES
	SET	SOD
	SPE	SRD
	SSI	STM
		TRW
1N1203A	Δ♦GESY	119 - 53
	CEN	CSR
	DIT	EDL
	ETC	FMC
	IDC	IDI
	♦INR	INRB
	INRI	INRJ
	♦MAL	MOTA
	NAE	♦RCA
	SAR	SCN
	SES	SOD
	SPE	SSI
	SST	STM
	TRW	UPI
		WESY
1N1203B	CEN	119 - 54
	CSR	EDL
	ETC	IDC
	IDI	♦INR
	INRB	INRI
	INRJ	NAE
	SAR	SCN
	SES	SOD
	SSI	STM
	STM	TRW
	UPI	WESY
1N1204	ΔWESY	119 - 64
	CEN	CSR
	DIT	EDL
	ETC	FMC
	GESY	IDI

cont.next col.

TYPE No.	MFRS	Pg&Line
1N1204		
(cont.)	♦INR	
	INRB	INRI
	INRJ	MOTA
	NAE	NASB
	♦SAR	SES
	SET	SOD
	SPE	SRD
	SSI	STM
		TRW
1N1204A	Δ♦GESY	119 - 65
	CEN	CSR
	DIT	EDL
	ESI	ETC
	FMC	IDC
	IDI	♦INR
	INRB	INRI
	INRJ	♦MAL
	MOTA	NAE
	♦RCA	SAR
	SCN	SES
	SOD	SPE
	SSI	SST
	STM	TRW
	UPI	WESY
JAN1N1204A	GESY	119 - 76
	INR	NAE
1N1204B	CEN	119 - 66
	CSR	EDL
	ETC	IDC
	IDI	♦INR
	INRB	INRI
	INRJ	NAE
	SAR	SCN
	SES	SOD
	SSI	SST
	STM	TRW
	UPI	WESY
JAN1N1204RA	GESY	119 - 77
	NAE	
1N1205	ΔWESY	119 - 78
	CEN	CSR
	EDL	ETC
	FMC	GESY
	IDI	♦INR
	INRB	INRI
	INRJ	MOTA
	NAE	♦SAR
	SES	SET
	SOD	SRD
	SSI	STM
1N1205A	Δ♦GESY	119 - 79
	CEN	CSR
	EDL	ESI
	ETC	FMC
	IDC	IDI
	♦INR	INRB
	INRI	INRJ
	♦MAL	MOTA
	NAE	♦RCA
	SAR	SCN
	SES	SOD
	SPE	SSI
	SST	STM
		WESY
1N1205B	CEN	119 - 80
	CSR	EDL
	ETC	IDC
	IDI	♦INR
	INRB	INRI
	INRJ	NAE
	SAR	SCN
	SES	SOD
	SSI	SST
	STM	WESY
1N1206	ΔWESY	119 - 88
	CEN	CSR
	EDL	ETC
	FMC	GESY
	IDI	♦INR
	INRB	INRI
	INRJ	MOTA
	NAE	NASB
	♦SAR	SES
	SET	SOD
	SPE	SRD
	SSI	STM
1N1206A	Δ♦GESY	119 - 89
	CEN	CSR
	EDL	ESI
	ETC	FMC
	IDC	IDI
	♦INR	INRB
	INRI	INRJ
	♦MAL	MOTA
	NAE	♦RCA
	SAR	SCN
	SES	SOD
	SPE	SSI
	SST	STM
	TRW	UPI
		WESY
JAN1N1206A	GESY	119-105
	INR	NAE
1N1206B	CEN	119 - 90
	CSR	EDL
	ETC	IDC
	IDI	♦INR
	INRB	INRI
	INRJ	NAE
	SAR	SCN
	SES	SOD
	SSI	SST
	STM	WESY

TYPE No.	MFRS	Pg&Line
JAN1N1206RA	GESY	119-106
	NAE	
1N1281	ETC	144 - 11
	SES	SSI
1N1282	ETC	144 - 14
	SES	SPE
		SSI
1N1283	ETC	144 - 17
	SES	SSI
1N1284	ETC	144 - 20
	SES	SSI
1N1285	ETC	144 - 24
	SES	SSI
1N1286	ETC	144 - 28
	SES	SSI
1N1287	SES	144 - 31
		SSI
1N1291	SES	144 - 12
		SSI
1N1292	SES	144 - 15
	SPE	SSI
1N1293	SES	144 - 18
		SSI
1N1294	SES	144 - 21
		SSI
1N1295	SES	144 - 25
		SSI
1N1296	SES	144 - 29
		SSI
1N1297	SES	144 - 32
		SSI
1N1301	CEN	129 - 73
	CSR	DPI
	EDL	ETC
	FMC	IDC
	SCN	SES
	SOD	SSI
		SST
1N1302	CEN	129 - 75
	CSR	DPI
	EDL	ETC
	FMC	IDC
	SCN	SES
	SOD	SSI
		SST
1N1304	CEN	129 - 78
	CSR	DPI
	EDL	ETC
	FMC	IDC
	SCN	SES
	SOD	SSI
		SST
1N1306	CEN	129 - 79
	CSR	DPI
	EDL	ETC
	FMC	IDC
	SES	SOD
	SSI	SST
1N1330	INR	147 - 10
	INRB	INRI
	INRJ	SSI
1N1331	INR	147 - 12
	INRB	INRI
	INRJ	SES
	SPE	SSI
1N1332	INR	147 - 14
	INRB	INRI
	INRJ	SES
		SSI
1N1333	INR	147 - 16
	INRB	INRI
	INRJ	SES
		SSI
1N1334	INR	147 - 19
	INRB	INRI
	INRJ	SES
		SSI
1N1335	INR	147 - 21
	INRB	INRI
	INRJ	SES
		SSI
1N1336	INR	147 - 24
	INRB	INRI
	INRJ	SES
		SSI
1N1351	CEN	189-172
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SPE	SSI
	STM	TRW
1N1351A	CSR	189-173
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
	SPE	SRD
	SSI	STM
		TRW
1N1351B	IDC	189-174
	SAR	SSI
		STM
1N1352	CEN	190 - 49

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TYPE No.	MFRS	Pg&Line
1N1352		
(cont.)	CSR	
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
	STM	TRW
1N1352A	CSR	190 - 50
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
	STM	TRW
1N1352B	IDC	190 - 51
	SAR	SSI
		STM
1N1353	CEN	190-127
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SPE	SSI
	STM	TRW
1N1353A	CSR	190-128
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SPE
	SSI	STM
		TRW
1N1353B	IDC	190-129
	SAR	SSI
		STM
1N1354	CEN	191 - 1
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SSI	STM
		TRW
1N1354A	CSR	191 - 2
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
	STM	TRW
1N1354B	IDC	191 - 3
	SAR	SSI
		STM
1N1355	CEN	191 - 90
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SPE	SSI
	STM	TRW
1N1355A	CSR	191 - 91
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
	STM	TRW
1N1355B	IDC	191 - 92
	SAR	SSI
		STM
1N1356	CEN	191-175
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE

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Δ-Registered with JEDEC by this manufacturer

♦-Copy of mfr's data sheet may be ordered from D.A.T.A.

1. TYPE No. CROSS INDEX

IN TYPE NUMBER SEQUENCE

TYPE No.	MFRS	Pg&Line
1N1356		
(cont.)	SCN	
	SES	♦SIE
	SOD	SPE
	SSI	STM
		TRW
1N1356A	CSR	191-176
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
	STM	TRW
1N1356B	IDC	191-177
	SAR	SSI
		STM
1N1357	CEN	192- 54
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SSI	STM
		TRW
1N1357A	CSR	192- 55
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SPE
	SSI	STM
		TRW
1N1357B	IDC	192- 56
	SAR	SSI
		STM
1N1358	CEN	192-154
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SPE	SSI
	STM	TRW
1N1358A	CSR	192-155
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SPE
	SSI	STM
		TRW
1N1358B	SAR	192-156
	SSI	STM
1N1359	CEN	193- 17
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SPE	SSI
	STM	TRW
1N1359A	CSR	193- 18
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
	STM	TRW
1N1359B	IDC	193- 19
	SAR	SSI
		STM
1N1360	CEN	193-102
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SPE	SSI
	STM	TRW
1N1360A	CSR	193-103
	ESP	ETC
cont.next col.		

TYPE No.	MFRS	Pg&Line
1N1360A		
(cont.)	GSE	
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SSI	STM
		TRW
1N1360B	IDC	193-104
	SAR	SSI
		STM
1N1361	CEN	193-188
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SPE	SSI
	STM	TRW
1N1361A	CSR	193-189
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
	STM	TRW
1N1361B	IDC	193-190
	SAR	SSI
		STM
1N1362	CEN	194- 61
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SSI	STM
		TRW
1N1362A	CSR	194- 62
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
	STM	TRW
1N1362B	IDC	194- 63
	SAR	SSI
		STM
1N1363	CEN	194-130
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SSI	STM
		TRW
1N1363A	CSR	194-131
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
	STM	TRW
1N1363B	IDC	194-132
	SAR	SSI
		STM
1N1364	CEN	194-205
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SSI	STM
		TRW
1N1364A	CSR	194-206
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
cont.next col.		

TYPE No.	MFRS	Pg&Line
1N1364A		
(cont.)	SOD	
	SSI	STM
		TRW
1N1364B	IDC	194-207
	SAR	SSI
		STM
1N1365	CEN	195- 63
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SSI	STM
		TRW
1N1365A	CSR	195- 64
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
	STM	TRW
1N1365B	IDC	195- 65
	SAR	SSI
		STM
1N1366	CEN	195-134
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
	STM	TRW
1N1366A	CSR	195-135
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
	STM	TRW
1N1366B	IDC	195-136
	SAR	SSI
		STM
1N1367	CEN	195-211
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SSI	STM
		TRW
1N1367A	CSR	196- 1
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
	STM	TRW
1N1367B	IDC	196- 2
	SAR	SSI
		STM
1N1368	CEN	196- 89
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SSI	STM
		TRW
1N1368A	CSR	196- 90
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
	STM	TRW
1N1368B	IDC	196- 91
	SAR	SSI
		STM
1N1369	CEN	196-159
	CSR	ESP
cont.next col.		

TYPE No.	MFRS	Pg&Line
1N1369		
(cont.)	ETC	
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
		STM
1N1369A	CSR	196-160
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
		STM
1N1369B	IDC	196-161
	SAR	SSI
		STM
1N1370	CEN	197- 21
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SSI	STM
1N1370A	CSR	197- 22
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
	STM	TRW
1N1370B	IDC	197- 23
	SAR	SSI
		STM
1N1371	CEN	197- 81
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SSI	STM
1N1371A	CSR	197- 82
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SPE
	SSI	STM
1N1371B	IDC	197- 83
	SAR	SSI
		STM
1N1372	CEN	197-151
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	MULB	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SPE	SSI
1N1372A	CSR	197-152
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	MULB
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
		STM
1N1372B	IDC	197-153
	SAR	SSI
		STM
1N1373	CEN	198- 9
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
		STM
1N1373A	CSR	198- 10
cont.next col.		

TYPE No.	MFRS	Pg&Line
1N1373A		
(cont.)	ESP	
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
		STM
1N1373B	IDC	198- 11
	SAR	SSI
		STM
1N1374	CEN	198- 77
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
		STM
1N1374A	CSR	198- 78
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SSI	STM
1N1374B	IDC	198- 79
	SAR	SSI
		STM
1N1375	CEN	198-135
	CSR	ESP
	ETC	GSE
	IDC	♦INR
	INRB	INRI
	INRJ	MOTA
	NAE	SAR
	SCE	SCN
	SES	♦SIE
	SOD	SSI
		STM
1N1375A	CSR	198-136
	ESP	ETC
	GSE	IDC
	♦INR	INRB
	INRI	INRJ
	MOTA	NAE
	SAR	SCE
	SCN	SES
	♦SIE	SOD
	SSI	STM
1N1376	ETC	147- 11
	SES	SSI
1N1377	ETC	147- 13
	SES	SSI
1N1378	ETC	147- 15
	SES	SSI
1N1379	ETC	147- 17
	SES	SSI
1N1380	ETC	147- 20
	SES	SSI
1N1381	ETC	147- 22
	SES	SSI
1N1382	SES	147- 25
		SSI
1N1396	EDL	136- 68
	FMC	SES
	SPE	SSI
1N1397	EDL	136- 72
	FMC	SES
	SPE	SSI
1N1398	EDL	136- 76
	FMC	SES
	SPE	SSI
1N1399	EDL	136- 78
	FMC	SES
	SPE	SSI
1N1400	EDL	136- 84
	FMC	SES
	SPE	SSI
1N1401	EDL	136- 89
	FMC	SES
		SSI
1N1402	EDL	136- 92
	FMC	SES
	SPE	SSI
1N1403	EDL	136- 95
	FMC	SES
	SPE	SSI
1N1416	CEN	189- 23
	SES	SSI
1N1417	CEN	190-130
	SES	SSI
1N1418	CEN	191- 93
	SES	SSI
1N1419	CEN	192- 57
	SES	SSI
1N1420	CEN	193- 20
	IDC	SES
		SSI
1N1421	CEN	193-191
	SES	SSI
1N1422	CEN	197- 84
	SES	SSI
1N1423	CEN	198-137
	SES	SSI

Δ-Registered with JEDEC by this manufacturer

♦-Copy of mfr's data sheet may be ordered from D.A.T.A.