Data Sheet No. PD-2.030D

INTERNATIONAL RECTIFIER IOR

1N3879, 1N3889, 6FL, 12FL, 16FL SERIES

6A, 12A and 16A Fast Recovery Rectifiers

Major Ratings and Characteristics

		1N3879 –1N3883	1N3889 –1N3893	6FL...	12FL...	16FL...	Unit
$I_{F(AV)}$ †		6*	12*	6	12	16	A
I_{FSM}	50Hz	72	145	110	145	180	A
	60Hz	75*	150*	115	150	190	A
I^2t	50Hz	26	103	60	103	160	A^2s
	60Hz	23	94	55	94	150	A^2s
$I^2\sqrt{t}$		363	1452	855	1452	2290	$A^2\sqrt{s}$
t_{rr} range		see table					ns
V_{RRM} range		50 – 400*		50 – 1000			V
T_J range		–65 to 150					°C

*JEDEC registered values.

† At max. T_C = 100°C.

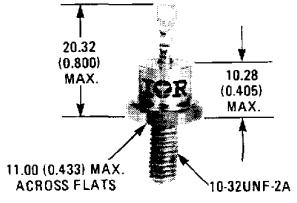
Description

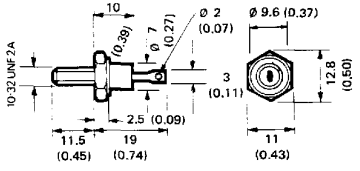
This range of fast recovery diodes is designed for applications in DC power supplies, inverters, converters, choppers, ultrasonic systems and for use as free wheel diodes.

Features

- Short reverse recovery time
- Low stored charge
- Wide current range
- Excellent surge capabilities
- *Standard JEDEC types*
- Stud cathode and stud anode versions
- Types up to 1000V V_{RRM}
- Fully characterised reverse recovery conditions

CASE STYLE AND DIMENSIONS





Conforms to JEDEC : DO–203AA (DO–4)
IEC 191–2 : A3U
BS 3934 : SO–10A
DIN 41885 : 101 C 2

All dimensions in millimetres (inches)

REVERSE VOLTAGE RATINGS

Part Number ② ⑥			V_{RRM} – Max. Repetitive Peak Reverse Voltage	V_{RRM} – Max. Non-Repetitive Peak Reverse Voltage $t_p \leq 5$ ms	I_R – Max. Reverse Current At Rated V_R			
					$T_J = 25^oC$	$T_J = 100^oC$	$T_J = 150^oC$	
			V	V	mA	mA	mA	
	1N3879		50	75	0.015*	1.0*	3.0*	
	1N3880		100	150	0.015*	1.0*	3.0*	
	1N3881		200	250	0.015*	1.0*	3.0*	①
	1N3882		300	350	0.015*	1.0*	3.0*	
	1N3883		400	450	0.015*	1.0*	3.0*	
	1N3889		50	75	0.025*	3.0*	5.0*	
	1N3890		100	150	0.025*	3.0*	5.0*	
	1N3891		200	250	0.025*	3.0*	5.0*	①
	1N3892		300	350	0.025*	3.0*	5.0*	
	1N3893		400	450	0.025*	3.0*	5.0*	
**6FL5S02	6FL5S05	6FL5S10	50	75	0.050	–	6.0	
6FL10S02	6FL10S05	6FL10S10	100	150	0.050	–	6.0	
6FL20S02	6FL20S05	6FL20S10	200	275	0.050	–	6.0	
6FL40S02	6FL40S05	6FL40S10	400	500	0.050	–	6.0	④
6FL60S02	6FL60S05	6FL60S10	600	725	0.050	–	6.0	
–	6FL80S05	6FL80S10	800	950	0.050	–	6.0	
–	6FL100S05	6FL100S10	1000	1250	0.050	–	6.0	
**12FL5S02	12FL5S05	12FL5S10	50	75	0.050	–	6.0	
12FL10S02	12FL10S05	12FL10S10	100	150	0.050	–	6.0	
12FL20S02	12FL20S05	12FL20S10	200	275	0.050	–	6.0	
12FL40S02	12FL40S05	12FL40S10	400	500	0.050	–	6.0	④
12FL60S02	12FL60S05	12FL60S10	600	725	0.050	–	6.0	
–	12FL80S05	12FL80S10	800	950	0.050	–	6.0	
–	12FL100S05	12FL100S10	1000	1250	0.050	–	6.0	
**16FL5S02	16FL5S05	16FL5S10	50	75	0.050	–	6.0	
16FL10S02	16FL10S05	16FL10S10	100	150	0.050	–	6.0	
16FL20S02	16FL20S05	16FL20S10	200	275	0.050	–	6.0	
16FL40S02	16FL40S05	16FL40S10	400	500	0.050	–	6.0	④
16FL60S02	16FL60S05	16FL60S10	600	725	0.050	–	6.0	
–	16FL80S05	16FL80S10	800	950	0.050	–	6.0	
–	16FL100S05	16FL100S10	1000	1250	0.050	–	6.0	

REVERSE RECOVERY CHARACTERISTICS

		1N3879–1N3883	1N3889–1N3893	6FL...			12FL...			16FL...			Unit	Conditions
				S02	S05	S10	S02	S05	S10	S02	S05	S10		
t_{rr}	Max. reverse recovery time	150	150	110	285	490	100	250	430	90	225	390	ns	$T_J = 25^oC$, $I_F = 1A$ to $V_R = 30V$, $dI_F/dt = 100\ A/\mu s$
		300*	300*	200	500	1000	200	500	1000	200	500	1000	ns	$T_J = 25^oC$, $dI_F/dt = 25\ A/\mu s$,
$I_{RM(REC)}$	Max. peak recovery current	4*	5*	–	–	–	–	–	–	–	–	–	–	$I_{FM} = \pi \times$ rated $I_{F(AV)}$
Q_{RR}	Max. reverse recovered charge	400	350	230	1700	5000	200	1300	3800	150	1100	3000	nC	$T_J = 25^oC$, $I_F = 1A$ to $V_R = 30V$, $dI_F/dt = 100\ A/\mu s$
		400	400	200	1200	5000	200	1200	5000	200	1200	5000	nC	$T_J = 25^oC$, $dI_F/dt = 25\ A/\mu s$, $I_{FM} = \pi \times$ rated $I_{F(AV)}$

ELECTRICAL SPECIFICATIONS

		1N3879–1N3883	6FL...	1N3889–1N3893 12FL...	16FL...	Unit	Conditions	
	FORWARD CONDUCTION							
$I_{F(AV)}$	Max. average forward current	6*	6	12*	16	A	180° conduction, half sine wave, $T_C = 100^oC$	
$I_{F(RMS)}$	Max. r.m.s. forward current	9.5	9.5	19	25	A		
I_{FSM}	Max. peak one-cycle non-repetitive forward current	72	110	145	180	A	t = 10 ms, With rated V_{RRM}	Sinusoidal half wave, initial $T_J = 150^oC$
		75*	115	150*	190		t = 8.3 ms, With rated V_{RRM}	
		85	130	170	215		t = 10 ms, $V_{RRM} = 0$	
		90	135	180	225		t = 8.3 ms, $V_{RRM} = 0$	
I^2t	Max. I^2t for fusing	26	60	103	160	A^2s	t = 10 ms, With rated V_{RRM}	Initial $T_J = 150^oC$
		23	55	94	150		t = 8.3 ms, With rated V_{RRM}	
	Max. I^2t for individual device fusing	36	86	145	230		t = 10 ms, $V_{RRM} = 0$	
		33	78	130	210		t = 8.3 ms, $V_{RRM} = 0$	
$I^2\sqrt{t}$	Max. $I^2\sqrt{t}$ for individual device fusing ⑤	363	856	1452	2290	$I^2\sqrt{s}$	t = 0.1 to 10 ms	
V_{FM}	Max. peak forward voltage	1.4*	1.4	1.4*	1.4	V	$T_J = 25^oC$, I_F = rated $I_{F(AV)}$ (D.C.)	
		1.5*	1.5	1.5*	1.5		$T_C = 100^oC$, $I_{FM} = \pi \times$ rated $I_{F(AV)}$	

*JEDEC registered value
**Suffix "S02" may be omitted, i.e., 12FL10 implies 12FL10S02, 12FLR60 implies 12FLR60S02.

② Types listed are cathode to case; for anode-to-case include "R" in code, i.e., 1N3879R, 6FLR20S10, 16FLR40S02.

③ $I_{R(AV)}$ @ rated $I_{F(AV)}$ and V_{RRM}, and $T_C = 100^oC$.

④ I_{RM} @ rated V_{RRM} and $T_J = 150^oC$.

⑤ I^2t for time $t_x = I^2\sqrt{t} \cdot \sqrt{x}$

⑥ When these devices are ordered without a suffix, e.g., 40HFL, the order will be filled with devices that meet the S02 specification.

Thermal and mechanical specifications

			1N3879 –1N3883 6FL...	1N3889 –1N3893 12FL...	16FL...	Units	Conditions
T_J	Junction operating temperature range		–65 to 150			°C	
T_{stg}	Storage temperature range		–65 to 175			°C	
R_{thJC}	Maximum internal thermal resistance, junction to case		2.5	2.0	1.6	deg C/W	DC operation
R_{thCS}	Maximum thermal resistance, case to heatsink		0.5			deg C/W	Mounting surface flat, smooth and greased.
T	Mounting torque ±.10%	to nut	10.5			lbf.in	Lubricated threads (Non-lubricated threads)
			0.12			kgf.m	
			1.2			Nm	
		to device	11.5 (13.5)			lbf.in	
			0.13 (0.155)			kgf.m	
			1.3 (1.35)			Nm	
wt	Approximate weight		7			g	
			0.25			oz	
	Case style		DO–203AA (DO–4)				JEDEC

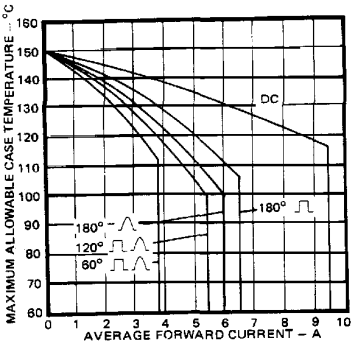


Fig. 1 – Average Forward Current Vs. Maximum Allowable Case Temperature, 1N3879 and 6FL Series

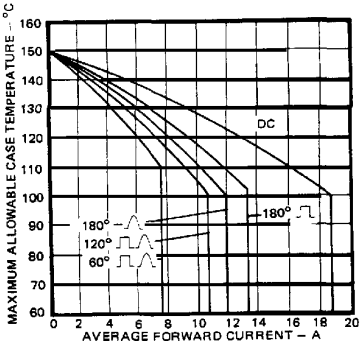


Fig. 2 – Average Forward Current Vs. Maximum Allowable Case Temperature, 1N3889 and 12FL Series

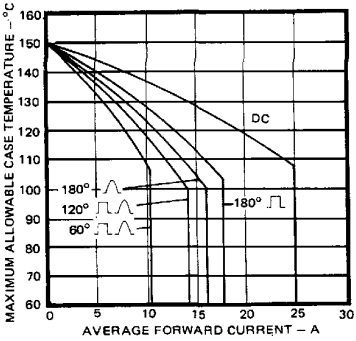
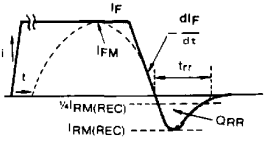


Fig. 3 – Average Forward Current Vs. Maximum Allowable Case Temperature, 16FL Series



I_F, I_{FM} = Peak forward current prior to commutation

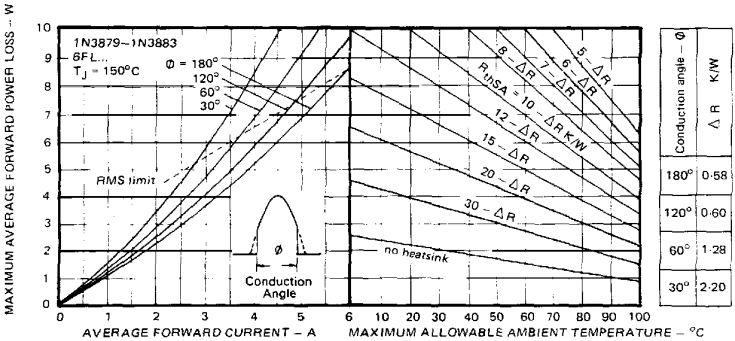
$-dI_F/dt$ = Rate of fall of forward current

$I_{RM(REC)}$ = Peak reverse recovery current

t_{rr} = Reverse recovery time

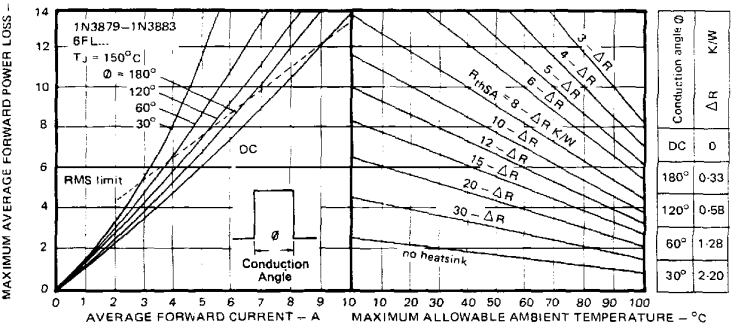
Q_{RR} = Reverse recovered charge

Fig. 4 – Reverse Recovery Time Test Waveform



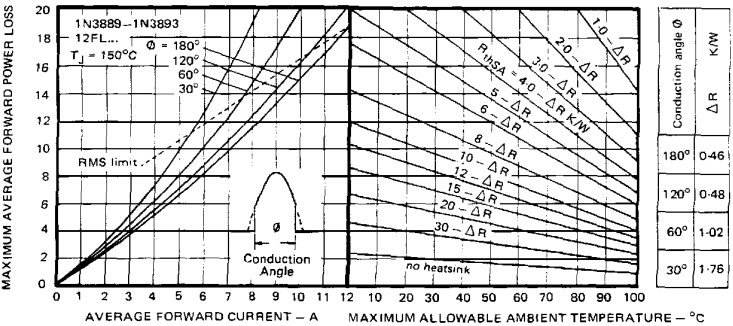
Conduction angle – Ø	ΔR K/W
180°	0·58
120°	0·60
60°	1·28
30°	2·20

Fig. 5 — Current Rating Nomogram (Sinusoidal Waveforms), 1N3879 and 6FL Series



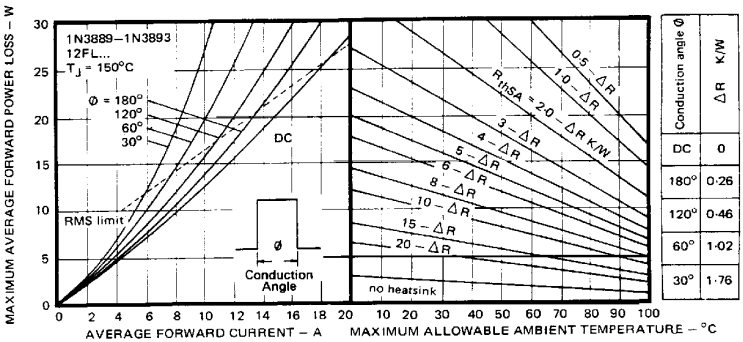
Conduction angle Ø	ΔR K/W
DC	0
180°	0·33
120°	0·58
60°	1·28
30°	2·20

Fig. 6 — Current Rating Nomogram (Rectangular Waveforms), 1N3879 and 6FL Series



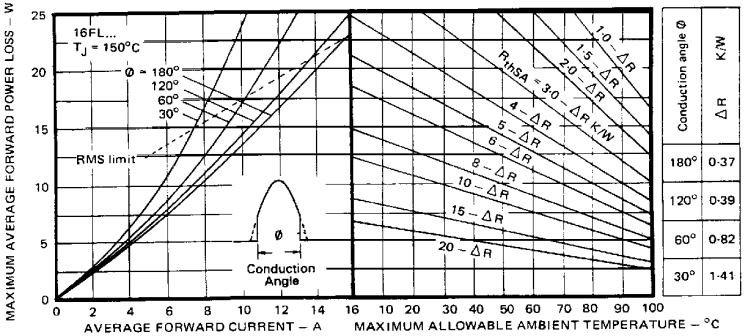
Conduction angle Ø	ΔR K/W
180°	0·46
120°	0·48
60°	1·02
30°	1·76

Fig. 7 — Current Rating Nomogram (Sinusoidal Waveforms), 1N3889 and 12FL Series



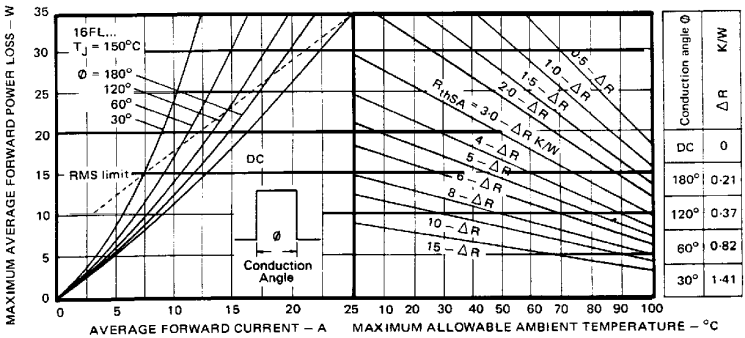
Conduction angle Ø	ΔR K/W
DC	0
180°	0·26
120°	0·46
60°	1·02
30°	1·76

Fig. 8 – Current Rating Nomogram (Rectangular Waveforms), 1N3889 and 12FL Series



Conduction angle Ø	ΔR K/W
180°	0·37
120°	0·39
60°	0·82
30°	1·41

Fig. 9 – Current Rating Nomogram (Sinusoidal Waveforms), 16FL Series



Conduction angle Ø	ΔR K/W
DC	0
180°	0·21
120°	0·37
60°	0·82
30°	1·41

Fig. 10 – Current Rating Nomogram (Rectangular Waveforms), 16FL Series

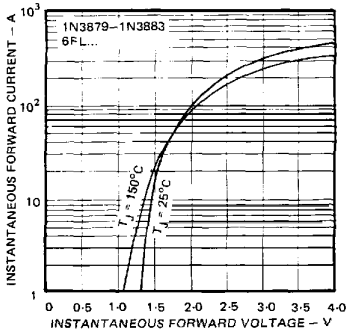


Fig. 11 – Maximum Forward Voltage Vs. Forward Current, 1N3879 and 6FL Series

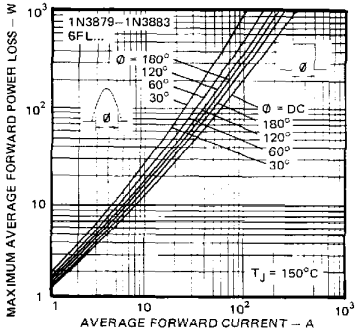


Fig. 12 – Maximum High Level Forward Power Loss Vs. Average Forward Current, 1N3879 and 6FL Series

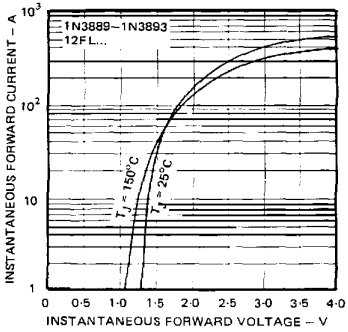


Fig. 13 – Maximum Forward Voltage Vs. Forward Current, 1N3889 and 12FL Series

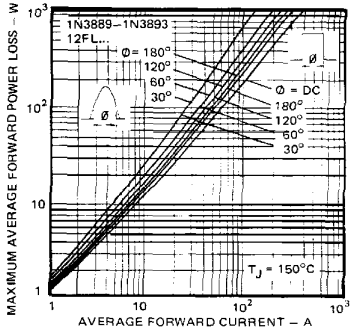


Fig. 14 – Maximum High Level Forward Power Loss Vs. Average Forward Current, 1N3889 and 12FL Series

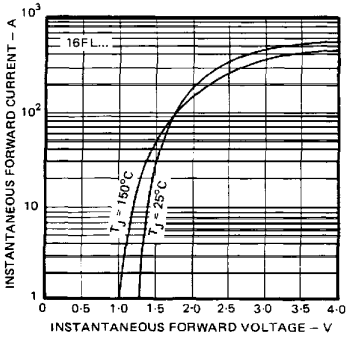


Fig. 15 – Maximum Forward Voltage Vs. Forward Current, 16FL Series

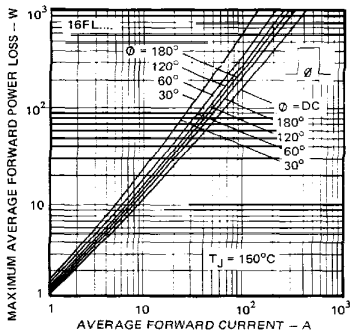


Fig. 16 – Maximum High Level Forward Power Loss Vs. Average Forward Current, 16FL Series

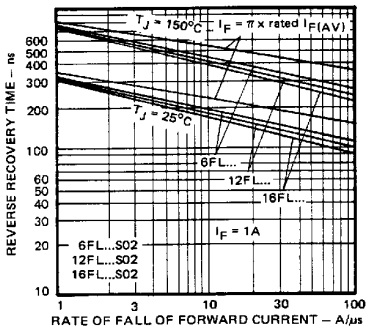


Fig. 17A – Maximum Reverse Recovery Time Vs. Rate of Fall of Forward Current, All Series __S02

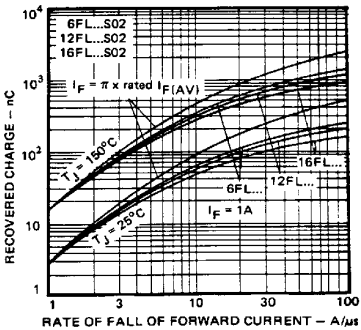


Fig. 17B – Maximum Recovered Charge Vs. Rate of Fall of Forward Current, All Series __S02

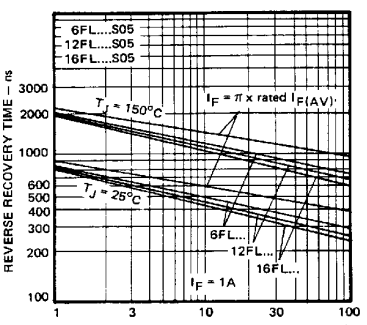


Fig. 18A – Maximum Reverse Recovery Time Vs. Rate of Fall of Forward Current, All Series __S05

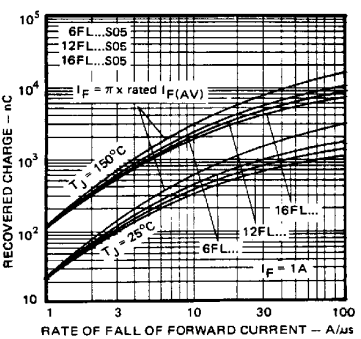


Fig. 18B – Maximum Recovered Charge Vs. Rate of Fall of Forward Current, All Series __S05

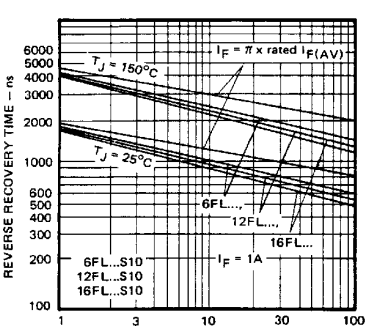


Fig. 19A – Maximum Reverse Recovery Time Vs. Rate of Fall of Forward Current, All Series __S10

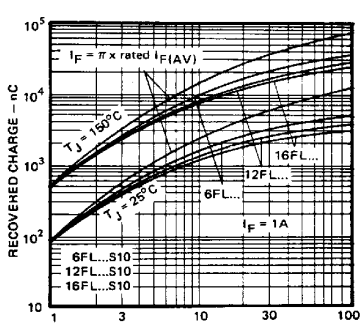


Fig. 19B – Maximum Recovered Charge Vs. Rate of Fall of Forward Current, All Series __S10

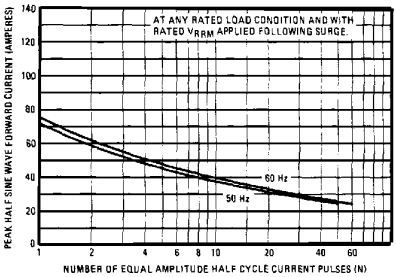


Fig. 20 – Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses, 1N3879 Series

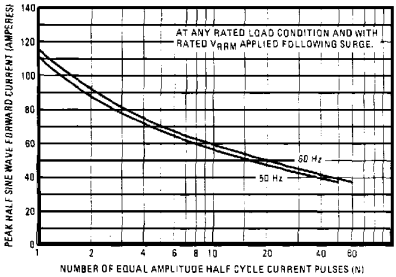


Fig. 21 – Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses, 6FL Series

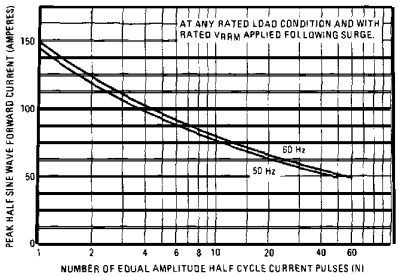


Fig. 22 – Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses, 1N3889 and 12FL Series

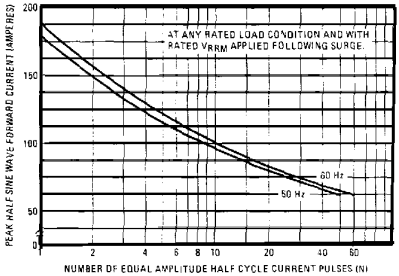


Fig. 23 – Maximum Non-Repetitive Surge Current Vs. Number of Current Pulses, 16FL Series

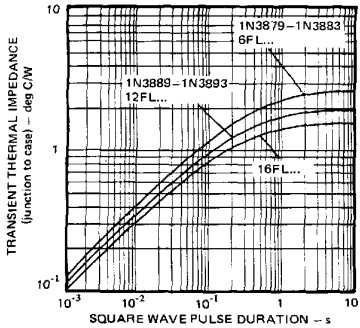


Fig. 24 – Maximum Transient Thermal Impedance, Junction-to-Case Vs. Pulse Duration, All Series.

О компании

ООО "ТрейдЭлектроникс" - это оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов. Реализуемая нашей компанией продукция насчитывает более полумиллиона наименований.

Благодаря этому наша компания предлагает к поставке практически не ограниченный ассортимент компонентов как оптовыми, мелкооптовыми партиями, так и в розницу.

Наличие собственной эффективной системы логистики обеспечивает надежную поставку продукции по конкурентным ценам в точно указанные сроки.

Срок поставки со стоков в **Европе и Америке – от 3 до 14 дней.**

Срок поставки из **Азии – от 10 дней.**

Благодаря развитой сети поставщиков, помогаем в поиске и приобретении экзотичных или снятых с производства компонентов.

Предоставляем спец цены на элементы для создания инженерных сэмплов.

Упорный труд, качественный результат дают нам право быть уверенными в себе и надежными для наших клиентов.

Наша компания это:

- Гарантия качества поставляемой продукции
- Широкий ассортимент
- Минимальные сроки поставок
- Техническая поддержка
- Подбор комплектации
- Индивидуальный подход
- Гибкое ценообразование

Наша организация особенно сильна в поставках модулей, микросхем, пассивных компонентов, ксайленсах (XC), EPF, EPM и силовой электроники.

Большой выбор предлагаемой продукции, различные виды оплаты и доставки, позволят Вам сэкономить время и получить максимум выгоды от сотрудничества с нами!

Trade Electronics.ru

гарантия бесперебойности производства и качества выпускаемой продукции

Перечень производителей, продукцию которых мы поставляем на российский рынок

AMD
ANALOG DEVICES
BOURNS
Coilcraft
élantec Semiconductor, Inc.
HARRIS
Infineon
JRC
MICREL
MOTOROLA
nichicon
PHILIPS
ROHM
SGS-THOMSON
Sipex
TAIYO YUDEN
TOKO
ZILOG
Winbond
Allegro
ATMEL
BURR - BROWN
EXAR
HITACHI
intel
Lattice
muRata
OKI
QUALCOMM
SAMSUNG
SHARP
SONY
TDK
TOSHIBA
KYOCERA
ALTERA
AVX
CITILYST
CYPRESS
FAIRCHILD SEMICONDUCTOR
HOLTEK
International IOR Rectifier
LINEAR TECHNOLOGY
MITSUBISHI
National Semiconductor
ON Semiconductor
REALTEK
SANYO
SHINDENGEN
SGS
TECCOR
TUNDRA
XILINX
Amphenol
Bay Linear
CIRRUS LOGIC
DALLAS
FUJITSU
IDT
intersil
MAXIM
molex
NEC
Panasonic
RENESAS
SII
SIEMENS
ST
Texas Instruments
VISHAY
ZETEX SEMICONDUCTORS

Trade Electronics.ru

гарантия бесперебойности производства и качества выпускаемой продукции

С удовольствием будем прорабатывать для Вас поставки всех необходимых компонентов по текущим запросам для скорейшего выявления групп элементов, по которым сотрудничество именно с нашей компанией будет для Вас максимально выгодным!

С уважением,

Менеджер отдела продаж ООО

«Трейд Электроникс»

Шишлаков Евгений

8 (495)668-30-28 доб 169

manager28@tradeelectronics.ru

http://www.tradeelectronics.ru/