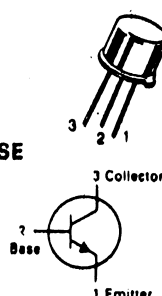


20 STERN AVE.
 SPRINGFIELD, NEW JERSEY 07081
 U.S.A.

TELEPHONE: (201) 376-2922
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2N3300

TO-39
GENERAL PURPOSE TRANSISTOR



2N3302

TO-18
GENERAL PURPOSE TRANSISTOR

NPN SILICON

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage (Applicable 0 to 10 mAdc)	V _{CEO}	30	Vdc
Collector-Base Voltage	V _{CBO}	60	Vdc
Emitter-Base Voltage	V _{EBO}	5.0	Vdc
Collector Current — Continuous	I _C	500	mAdc
Total Device Dissipation (at T _A = 25°C Derate above 25°C)	P _D	2N3300	0.8
		2N3302	0.36
Total Device Dissipation (at T _C = 25°C Derate above 25°C)	P _D	2N3300	4.56
		2N3302	2.06
Total Device Dissipation (at T _C = 25°C Derate above 25°C)	P _D	2N3300	3.0
		2N3302	1.8
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-65 to +200	°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage(1) (I _C = 10 mAdc, I _B = 0)	V _{CEO(sus)}	30	—	Vdc
Collector-Base Breakdown Voltage (I _C = 10 μAdc, I _E = 0)	V _{(BR)CBO}	60	—	Vdc
Emitter-Base Breakdown Voltage (I _E = 10 μAdc, I _C = 0)	V _{(BR)EBO}	5.0	—	Vdc
Collector Cutoff Current (V _{CE} = 50 Vdc, V _{BE} = 0) (V _{CE} = 50 Vdc, V _{BE} = 0, T _A = 150°C)	I _{CES}	—	0.01 10	μAdc
Emitter Cutoff Current (V _{BE} = 3.0 Vdc, I _C = 0)	I _{EBO}	—	10	nAdc
Base Current (V _{CE} = 50 Vdc, V _{BE} = 0)	I _B	—	10	nAdc
ON CHARACTERISTICS				
DC Current Gain (I _C = 0.1 mAdc, V _{CE} = 10 Vdc) 2N3300, 2N3302 (I _C = 1.0 mAdc, V _{CE} = 10 Vdc) 2N3300, 2N3302 (I _C = 10 mAdc, V _{CE} = 10 Vdc)(1) 2N3300, 2N3302 (I _C = 150 mAdc, V _{CE} = 1.0 Vdc)(1) 2N3300, 2N3302 (I _C = 150 mAdc, V _{CE} = 10 Vdc)(1) 2N3300, 2N3302 (I _C = 500 mAdc, V _{CE} = 10 Vdc)(1) 2N3300, 2N3302	h _{FE}	35 50 75 50 100 50	— — — — 300 —	—
Collector-Emitter Saturation Voltage (I _C = 150 mAdc, I _B = 15 mAdc) (I _C = 300 mAdc, I _B = 30 mAdc) (I _C = 500 mAdc, I _B = 50 mAdc)	V _{CE(sat)}	—	0.22 0.45 0.6	Vdc
Base-Emitter Saturation Voltage (I _C = 150 mAdc, I _B = 15 mAdc) (I _C = 300 mAdc, I _B = 30 mAdc) (I _C = 500 mAdc, I _B = 50 mAdc)	V _{BE(sat)}	—	1.1 1.3 1.5	Vdc
Base Emitter Voltage (I _C = 150 mA, V _{CE} = 10 V)	V _{BE(on)}	—	1.1 V	Max
SMALL-SIGNAL CHARACTERISTICS				
Current-Gain — Bandwidth Product (I _C = 50 mAdc, V _{CE} = 10 Vdc, f = 100 MHz)	f _T	250	—	MHz
Output Capacitance (V _{CB} = 10 Vdc, I _E = 0, f = 140 kHz)	C _{obo}	—	8.0	pF
Input Capacitance (V _{BE} = 2.0 Vdc, I _C = 0, f = 140 kHz)	C _{ibo}	—	20	pF
SWITCHING CHARACTERISTICS				
Turn-On Time (V _{CC} = 25 Vdc, I _C = 300 mAdc, I _{B1} = 30 mAdc)	t _{on}	—	60	ns
Turn-Off Time (V _{CC} = 25 Vdc, I _C = 300 mAdc, I _{B1} = I _{B2} = 30 mAdc)	t _{off}	—	150	ns

(1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.



Quality Semi-Conductors

New Jersey Semi-Conductor Products, Inc.

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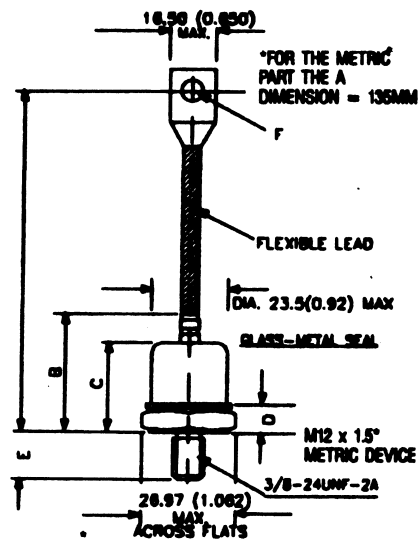
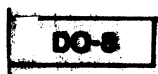
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Absolute Maximum Ratings

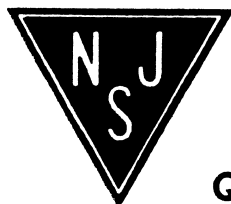
Characteristics	Symbol	IN3288A,AR - IN3297A,AR	Units
RMS Forward Current	$I_{F(rms)}$	160	Amperes
Average Forward Current	$I_{F(av)}$	100	Amperes
One-half Cycle Surge Current (at 60 Hz, Under Load)	I_{FSM}	2300	Amperes
I^2t (for Fusing) at 60 Hz Half-Wave	i^2t	22000	A ² sec
Storage Temperature	T_{stg}	-40 to +200	°C
Operating Temperature	T_j	-40 to +200	°C
Mounting Torque (Lubricated)		120	in-lb

Electrical and Thermal Characteristics

Characteristics	Symbol	IN3288A	IN3299A*	IN3290A	IN3291A*	IN3292A	IN3293A	IN3294A*	IN3295A*	IN3296A	IN3297A	Units
Current - Conducting State Maximums, $T_j = 200^\circ\text{C}$												
Forward Voltage Drop at 100A Average, $T_C = 130^\circ\text{C}$, Peak Volts	V_{FM}					1.5 (All Types)						Volts
Voltage - Blocking State Maximums												
Repetitive Peak Reverse Voltage	V_{RRM}	100	200	300	400	500	600	800	1000	1200	1400	Volts
Non-rep. Trans. Peak Rev. Voltage	V_{RSM}	200	300	400	525	650	800	1050	1300	1600	1800	Volts
Maximum Allowable DC Blocking Voltage	V_R	100	200	300	400	500	600	800	1000	1200	1400	Volts
Reverse Leakage Current, at Rated V_{RRM} , 100A Average, Single Phase, $T_C = 130^\circ\text{C}$	I_{RRM}	24	24	24	24	21	17	13	11	9	7	mA
Thermal												
Maximum Resistance, Junction to Case	$R_{\theta(j-c)}$					0.40 (All Types)						°C/Watt
Maximum Resistance, Case to Sink (Lubricated)	$R_{\theta(c-s)}$					0.15 (All Types)						°C/Watt



	A	B	C	D	E	F	
mm	114.3	41.27	27.8	8.81	18.25	6.70	PG A
Inches	4.5	1.625	1.093	0.347	0.84	0.264	
mm	178	38	24.0	12.5	18.25	8.3	PG B
Inches	6.98	1.496	0.945	0.492	0.840	0.32	



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