DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

C122 SERIES

SILICON CONTROLLED RECTIFIERS

FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

MAXIMUM RATINGS

Characteristics	C122F	C122A	C122B	C122C	C122D	C122E	C122M	Units
V_{RROM}△ V_{DROM}△	50	100	200	300	400	500	600	V
$I_{T(RMS)}$ (T_C = 75°C, θ = 180°)	8							A
I_{TSM} for one full cycle of applied principal voltage 400 Hz 60 Hz 50 Hz	200 100 85							A
di/dt $V_D = V_{DROM}$, I_{GT} = 80mA, t_r = 0.5µs	100							A/µs
I^2t T_J = -65 to +100°C, t = 1 to 8.3 ms	40							A^2s
P_{GM} * (for 10µs max)	16							W
$P_{G(AV)}$ * (averaging time = 10 ms max)	0.5							W
T_{stg}	-65 to +150							°C
T_C	-65 to +100							°C
T_T During soldering for 10 s maximum	250							°C

△ These values do not apply if there is a positive gate signal. Gate must be open or negatively biased.
* Any values of peak gate current or peak gate voltage which result in equal or lower power are permissible.

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise specified)

Characteristics	Limits			Units
	Min	Typ	Max	
I_{DOM} or I_{ROM} $V_D = V_{DROM}$ or $V_R = V_{RROM}$, T_C = 100°C	-	0.1	0.5	mA
V_T I_T = 16A, T_C = 25°C	-	1.45	1.83	V
I_{GT} V_D = 12V (DC), R_L = 30Ω, T_C = 25°C	-	10	15	mA
V_{GT} V_D = 12V (DC), R_L = 30Ω, T_C = 25°C	-	1.0	1.5	V
I_{HO} T_C = 25°C	-	20	30	mA
dv/dt $V_D = V_{DROM}$ exponential voltage rise, T_C = 100°C	10	100	-	V/µs
t_{gt} $V_D = V_{DROM}$, I_T = 4.5A, I_T = 2A, I_{GT} = 80mA, 0.1 µs rise time, T_C = 25°C	-	1.6	2.5	µs
t_q $V_D = V_{DROM}$, I_T = 2A, t_p = 50µs, dv/dt = 200V/µs, di/dt = -10A/µs, I_{GT} = 200mA @ t_{ON}, T_C = 75°C	-	10	35	µs
$R_{\theta JC}$	-	-	1.8	°C/W
$R_{\theta JA}$	-	-	75	

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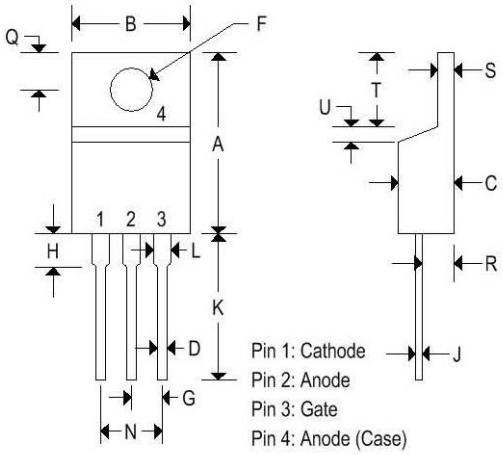
MECHANICAL CHARACTERISTICS

Case:	TO-220AB
Marking:	Body painted, alpha-numeric
Polarity:	Cathode band



	TO-220AB			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.575	0.620	14.600	15.750
B	0.380	0.405	9.650	10.290
C	0.160	0.190	4.060	4.820
D	0.025	0.035	0.640	0.890
F	0.142	0.147	3.610	3.730
G	0.095	0.105	2.410	2.670
H	0.110	0.155	2.790	3.930
J	0.014	0.022	0.360	0.560
K	0.500	0.562	12.700	14.270
L	0.045	0.055	1.140	1.390
N	0.190	0.210	4.830	5.330
Q	0.100	0.120	2.540	3.040
R	0.080	0.110	2.040	2.790
S	0.045	0.055	1.140	1.390
T	0.235	0.255	5.970	6.480
U	-	0.050	-	1.270
V	0.045	-	1.140	-
Z	-	0.080	-	2.030

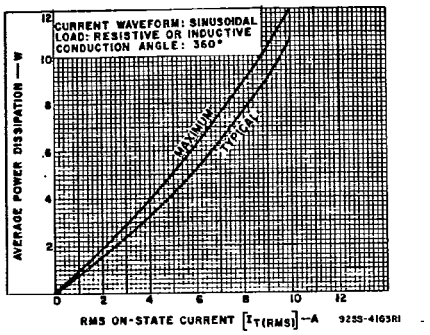


Fig. 1 — Power dissipation vs. on-state current.

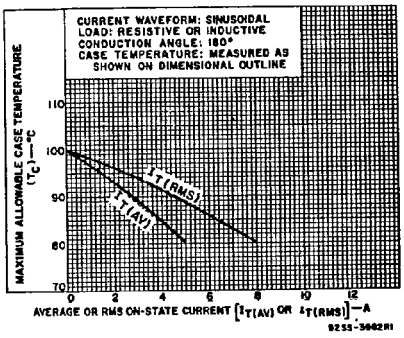


Fig. 2 — Maximum allowable case temperature vs. on-state current.

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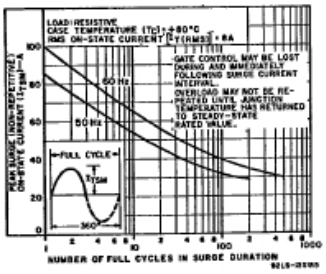

Fig. 3 — Allowable peak surge on-state current vs. surge duration.

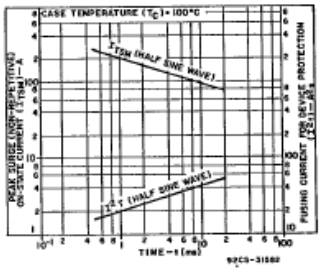

Fig. 4 — Peak surge on-state current and fusing current as a function of time.

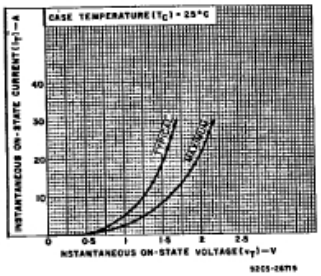

Fig. 5 — Instantaneous on-state current vs. on-state voltage.

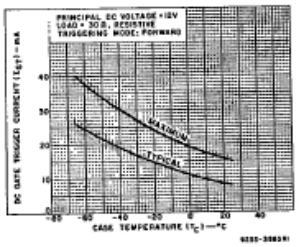

Fig. 6 — DC gate-trigger current vs. case temperature.

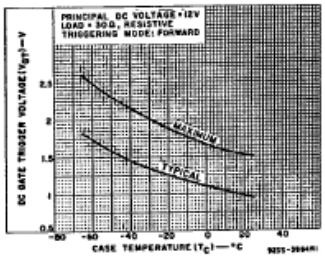

Fig. 7 — DC gate-trigger voltage vs. case temperature.

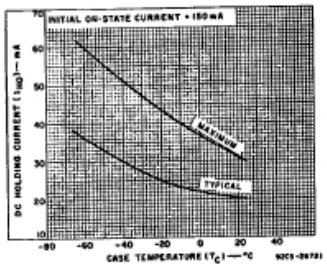

Fig. 8 — Holding current vs. case temperature.

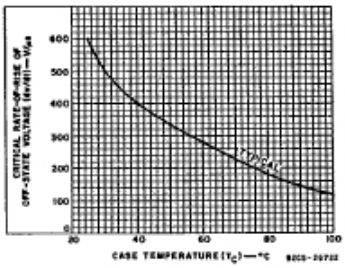

Fig. 9 — Critical rate of rise of off-state voltage vs. case temperature.

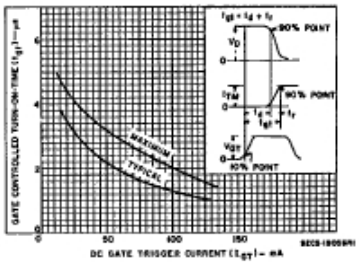

Fig. 10 — Gate-controlled turn-on time vs. gate trigger current.

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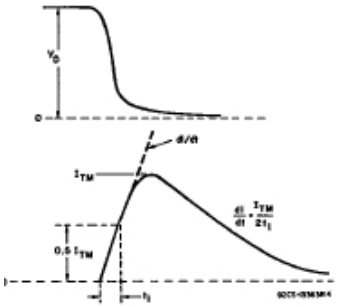

Fig. 11 — Rate of change of on-state current with time (defining di/dt).

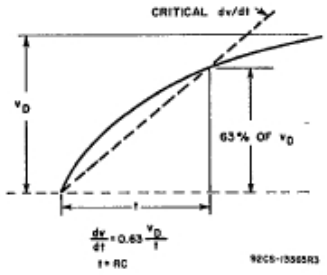

Fig. 12 — Rate of rise of off-state voltage with time (defining critical dv/dt).

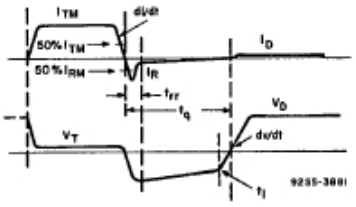

Fig. 13 — Relationship between instantaneous on-state current and voltage, showing reference points for measurement of circuit-commutated turn-off time (t_q).