

2N6157-2N6165

THYRISTORS

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

Rating	Symbol	Value	Unit
Peak repetitive off-state voltage $(T_J = -65 \text{ to } +125^\circ\text{C})$ (1/2 sine wave 50 to 60Hz, gate open) 2N6157, 2N6160, 2N6163 2N6158, 2N6161, 2N6164 2N6159, 2N6162, 2N6165	V_{DRM}	200 400 600	Volts
Peak gate voltage	V_{GM}	10	Volts
RMS on-state current (full sine wave, 50 to 60Hz) $(T_C = -65 \text{ to } +85^\circ\text{C})$ $(T_C = 100^\circ\text{C})$	$I_{T(RMS)}$	30 20	Amps
Peak non-repetitive surge current (1 cycle, sine wave, 60 Hz preceded and followed by a 30A RMS current, $T_C = 85^\circ\text{C}$)	I_{TSM}	250	Amps
Circuit fusing considerations ($t = 8.3\text{ms}$)	I^2t	260	A ² s
Peak gate power $(T_J = 80^\circ\text{C}, \text{ pulse width} = 2\mu\text{s})$	P_{GM}	20	Watts
Average gate power $(T_J = 80^\circ\text{C}, t = 8.3\text{ms})$	$P_{G(AV)}$	0.5	Watts
Peak gate current	I_{GM}	2.0	Amps
Operating junction temperature range	T_J	-65 to +125	$^\circ\text{C}$
Storage temperature range	T_{stg}	-65 to +150	$^\circ\text{C}$
Stud torque		30	In. lb.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Maximum	Unit
Thermal resistance, junction to case	$R_{\theta JC}$	1	$^\circ\text{C}/\text{W}$

ELECTRICAL CHARACTERISTICS @ 25°C unless otherwise noted

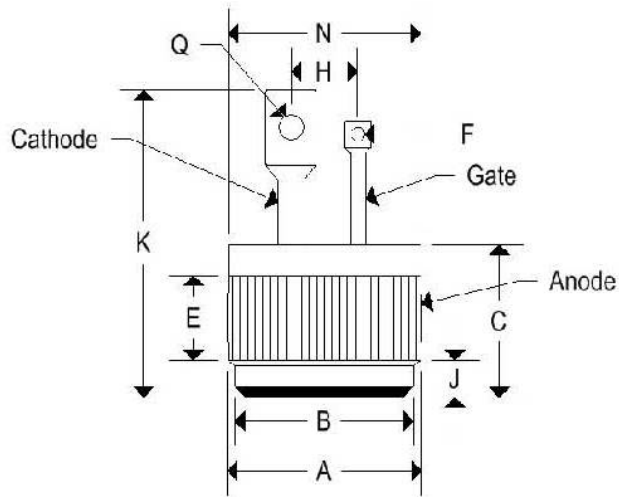
Characteristic	Symbol	Min	Typ.	Max	Unit
Peak forward or reverse blocking current (Rated V_{DRM} Or V_{RRM} @ $T_J = 25^\circ\text{C}$) (Rated V_{DRM} Or V_{RRM} @ $T_J = 125^\circ\text{C}$)	I_{DRM}, I_{RRM}	-	-	10 2	μA mA
Peak on-state voltage (either direction) ($I_{TM} = 42\text{A}$ peak, pulse width = 1 to 2 ms, duty cycle $\leq 2\%$)	V_{TM}	-	1.5	2.0	Volts
Gate trigger current (continuous dc) ⁽¹⁾ (Main terminal voltage = 12V, $R_L = 50\Omega$) MT2(+),G(+) MT2(+),G(-) MT2(-),G(-) MT2(-),G(+) MT2(+),G(+); MT2(-), G(-) $T_C = -65^\circ\text{C}$ MT2(+),G(-); MT2(-), G(+) $T_C = -65^\circ\text{C}$	I_{GT}	- - - - - - -	15 20 20 30 - - -	60 70 70 100 200 250	mA
Gate trigger voltage (continuous dc) (Main terminal voltage = 12V, $R_L = 50\Omega$) MT2(+),G(+) MT2(+),G(-) MT2(-),G(-) MT2(-),G(+) All quadrants Main terminal voltage = rated V_{DRM} , $R_L = 10k\Omega$, $T_J = 125^\circ\text{C}$	V_{GT}	- - - - - 0.2	0.8 0.7 0.85 1.1 - -	2 2.1 2.1 2.5 3.4 -	Volts
Holding current (Main terminal voltage = 12V, gate open) (initiating current = 500mA) MT2(+) MT2(-) Either direction, $T_C = -65^\circ\text{C}$	I_H	- - -	8 10 -	70 80 200	mA
Turn on time (Main terminal voltage = rated V_{DRM} , $I_{TM} = 42\text{A}$, gate source voltage = 12V, $R_S = 50\Omega$, rise time = 0.1 μs , pulse width = 2 μs)	t_{gt}	-	1	2	μs
Blocking voltage application rate at commutation, $f = 60\text{Hz}$, $T_C = 85^\circ\text{C}$ On state conditions: ($I_{TM} = 42\text{A}$, pulse width = 4ms, $di/dt = 17.5\text{A/ms}$) Off-state conditions: (Main terminal voltage = rated V_{DRM} , 200 μs min., gate source voltage = 0V, $R_S = 50\Omega$)	$dv/dt(c)$	-	5	-	V/ μs

2N6157-2N6165

THYRISTORS

MECHANICAL CHARACTERISTICS

Case	Digi PF2 (2N6157-2N6159)
Marking	Body painted, alpha-numeric



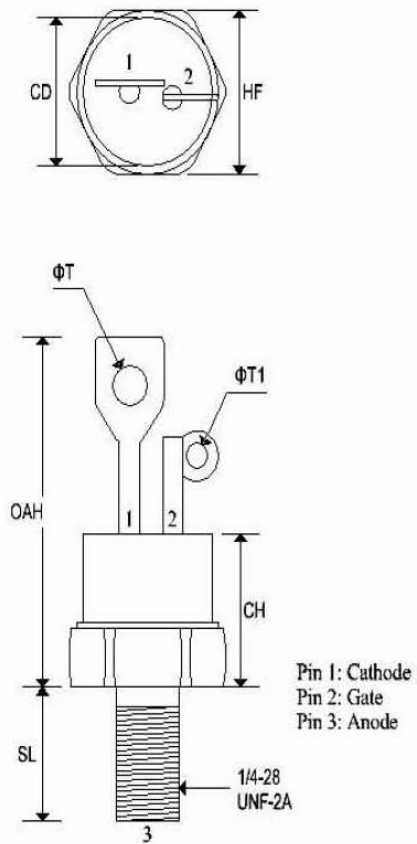
	DIGI PF2			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.501	0.505	12.730	12.830
B	0.465	0.475	11.810	12.060
C	0.330	0.380	8.390	9.650
E	0.100	-	2.540	-
F	0.035	0.085	0.890	2.160
J	0.080	0.097	2.040	2.460
K	-	0.800	-	20.320
N	-	0.510	-	12.950
Q	0.065	0.160	1.650	4.060

2N6157-2N6165

THYRISTORS

MECHANICAL CHARACTERISTICS

Case	TO-48 (2N6160-2N6162)
Marking	Alpha-numeric
Pin out	See below



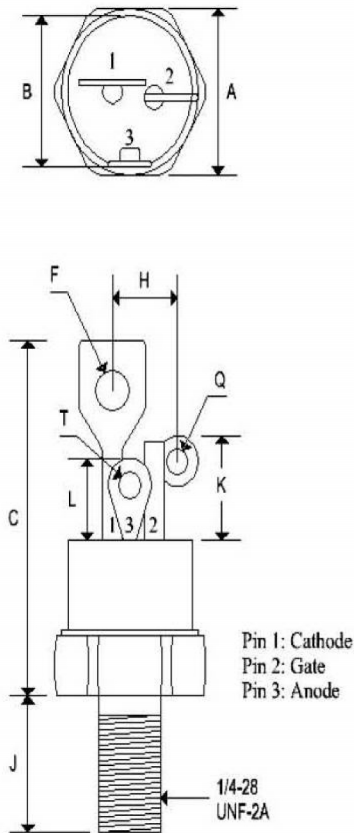
	TO-48			
	Inches		Millimeters	
	Min	Max	Min	Max
CD	-	0.543	-	13.793
CH	-	0.550	-	13.970
HF	0.544	0.563	13.817	14.301
OAH	-	1.193	-	30.303
SL	0.422	0.453	10.718	11.507
ΦT	0.125	0.165	3.175	4.191
ΦT ₁	0.060	0.075	1.524	1.905

2N6157-2N6165

THYRISTORS

MECHANICAL CHARACTERISTICS

Case	TO-48 ISO (2N6163-2N6165)
Marking	Alpha-numeric
Pin out	See below



	TO-48 ISO			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.551	0.559	14.000	14.200
B	0.501	0.505	12.730	12.830
C	-	1.280	-	32.510
F	-	0.160	-	4.060
H	-	0.265	-	6.730
J	0.420	0.455	10.670	11.560
K	0.300	0.350	7.620	8.890
L	0.255	0.275	6.480	6.990
Q	0.055	0.085	1.400	2.160
T	0.135	0.150	3.430	3.810

FIGURE 1 – RMS CURRENT DERATING

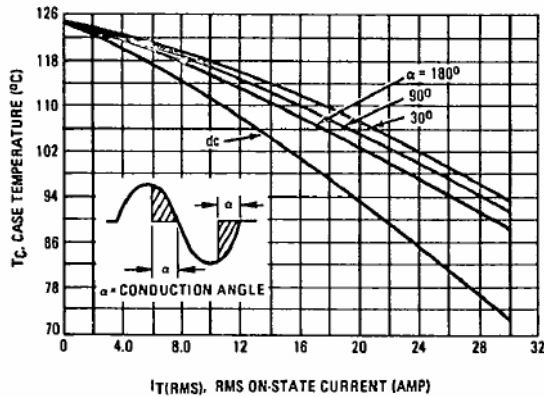


FIGURE 2 – POWER DISSIPATION

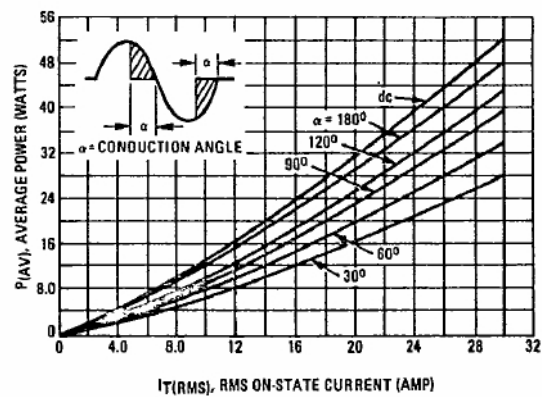


FIGURE 3 – TYPICAL GATE TRIGGER VOLTAGE

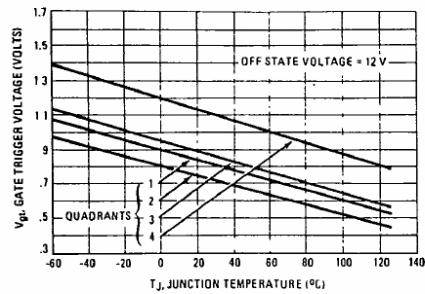


FIGURE 4 – TYPICAL GATE TRIGGER CURRENT

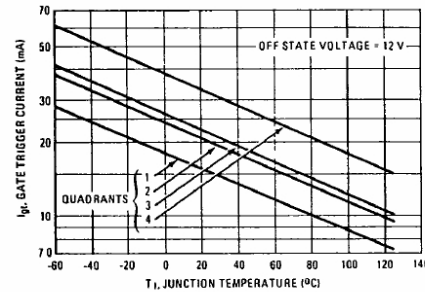


FIGURE 6 – TYPICAL HOLDING CURRENT

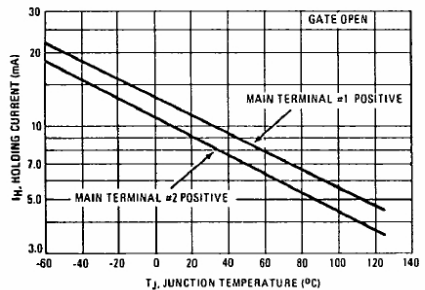


FIGURE 5 – MAXIMUM ON-STATE CHARACTERISTICS

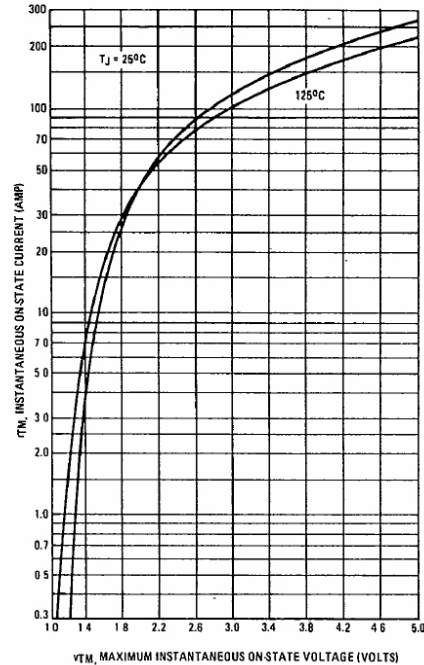


FIGURE 7 – MAXIMUM ALLOWABLE SURGE CURRENT

