



DESCRIPTION

This part is suitable for motor control, water heaters, lighting control, induction motor starting circuits, solid-state relays, on/off switching etc. The part is available in TO-220 package and is suitable for general purpose power switching applications.

FEATURES

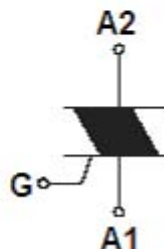
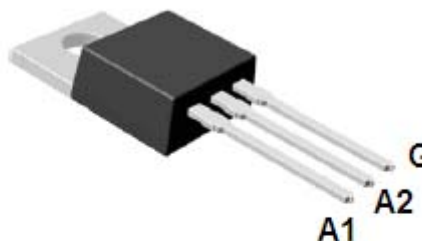
- TRIAC
- TO-220 Package
- Isolated Heat-sink
- $I_{T(RMS)} = 12\text{ A}$
- $V_{DRM} = 600/800\text{ Volt}$
- $V_{RRM} = 600/800\text{ Volt}$
- $I_{GT} = 30\text{ mA}$

APPLICATIONS

- AC power switching applications
- Washing Machine
- Vacuum Cleaner
- Rice Cookers
- Microwave Ovens
- Hair Dryers
- Copier Machines
- Motor Controls
- Dimmers
- Heater Controls
- Vending Machines

PIN-OUT

TO-220 Package





SPECIFICATIONS

ELECTRICAL CHARACTERISTICS ($T_j = 25^\circ\text{C}$)

PARAMETER		MAX VALUE	UNIT
Repetitive Peak Off-State Current, I_{DRM1}	$V_D = 600/800\text{V}$	2	mA
Peak On-state Voltage, V_{TM}	$I_T = 20\text{A}$	1.4	V
Gate Threshold Current, 1 st quadrant, I_{GT1}^+	$V_D = 6\text{V}, R_L = 10\Omega$	30	mA
Gate Threshold Current, 2 nd quadrant, I_{GT1}^-	$V_D = 6\text{V}, R_L = 10\Omega$	30	mA
Gate Threshold Current, 3 rd quadrant, I_{GT3}^+	$V_D = 6\text{V}, R_L = 10\Omega$	-	mA
Gate Threshold Current, 4 th quadrant, I_{GT3}^-	$V_D = 6\text{V}, R_L = 10\Omega$	30	mA
Gate Threshold Voltage, 1 st quadrant, V_{GT1}^+	$V_D = 6\text{V}, R_L = 10\Omega$	1.5	V
Gate Threshold Voltage, 2 nd quadrant, V_{GT1}^-	$V_D = 6\text{V}, R_L = 10\Omega$	1.5	V
Gate Threshold Voltage, 3 rd quadrant, V_{GT3}^+	$V_D = 6\text{V}, R_L = 10\Omega$	-	V
Gate Threshold Voltage, 4 th quadrant, V_{GT3}^-	$V_D = 6\text{V}, R_L = 10\Omega$	1.5	V
Gate-Drain On-Voltage, V_{GD}	$T_j = 125^\circ\text{C}, V_D = 0.5V_{\text{DRM}}$	0.2	V
dV/dt	$T_j = 125^\circ\text{C}, V_D = 400\text{V}$ $di/dt = -6\text{ A/ms}$	10	V/ μs
Holding Current, I_{H}		20	mA

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

PARAMETER		VALUE	UNIT
	V_{DRM}	600/800	V
RMS on-state current (full sine wave)	$I_{\text{T(RMS)}}$	12	A
Non-repetitive surge peak current	I_{TSM}	130	A
Value for fusing	I^2t	71	A^2s
Peak gate power dissipation	P_{GM}	5	W
Average peak gate power dissipation	$P_{\text{G(AV)}}$	0.5	W
Peak gate current	I_{GM}	2	A
Peak gate voltage	V_{GM}	10	V
Junction Temperature	T_j	-40 ~ +125	$^\circ\text{C}$



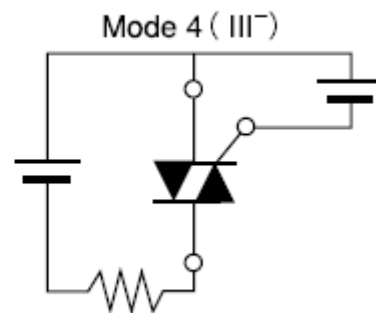
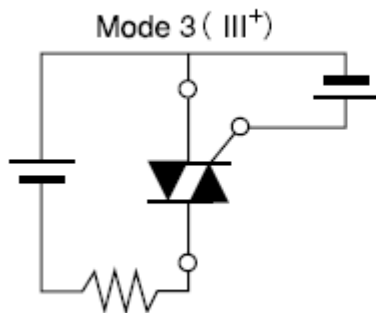
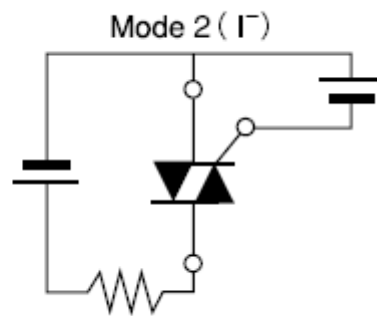
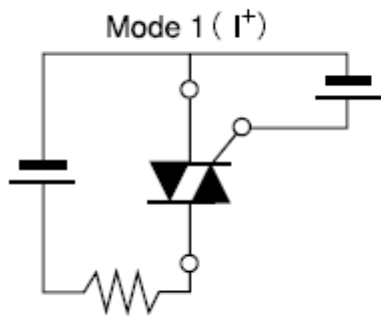
THERMAL RESISTANCE

PARAMETER	PACKAGE	VALUE	UNIT
$R_{th(j-c)}$	TO-220 - Insulated	3.3	°C/W
$R_{th(j-a)}$	TO-220 - Insulated	60	°C/W

OTHERS

PARAMETER		MIN	TYP	MAX	UNIT
Isolation Resistance	At 1000VDC, 1 min	-	-	1,000	MΩ
Isolation Voltage	Between pins and heatsink	-	-	1.5	kV
Temperature range		-40	-	125	°C
Relative humidity		35	-	65	%
Shock resistance	Destruction	-	-	100	G
	Malfunction	-	-	100	G
Vibration resistance	Destruction: 10 - 55 Hz	-	-	1.5	mm
	Malfunction: 10 - 55 Hz	-	-	1.5	mm

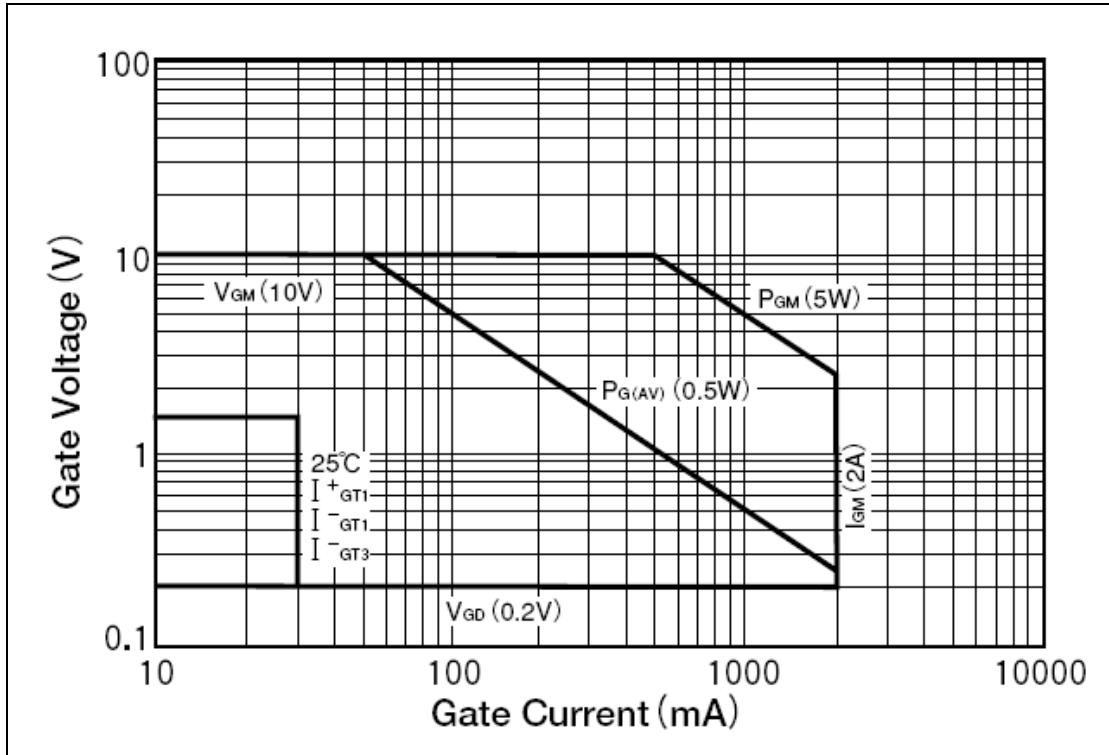
TRIGGER MODES



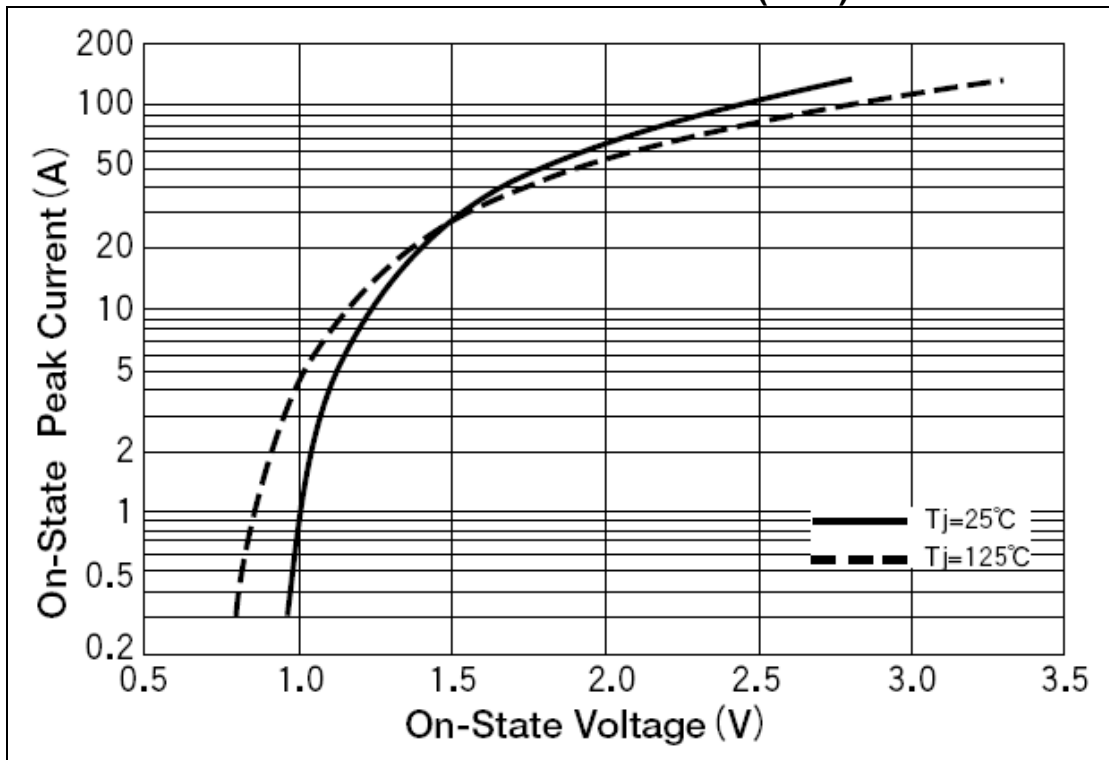


TYPICAL CHARACTERISTICS

GATE CHARACTERISTICS



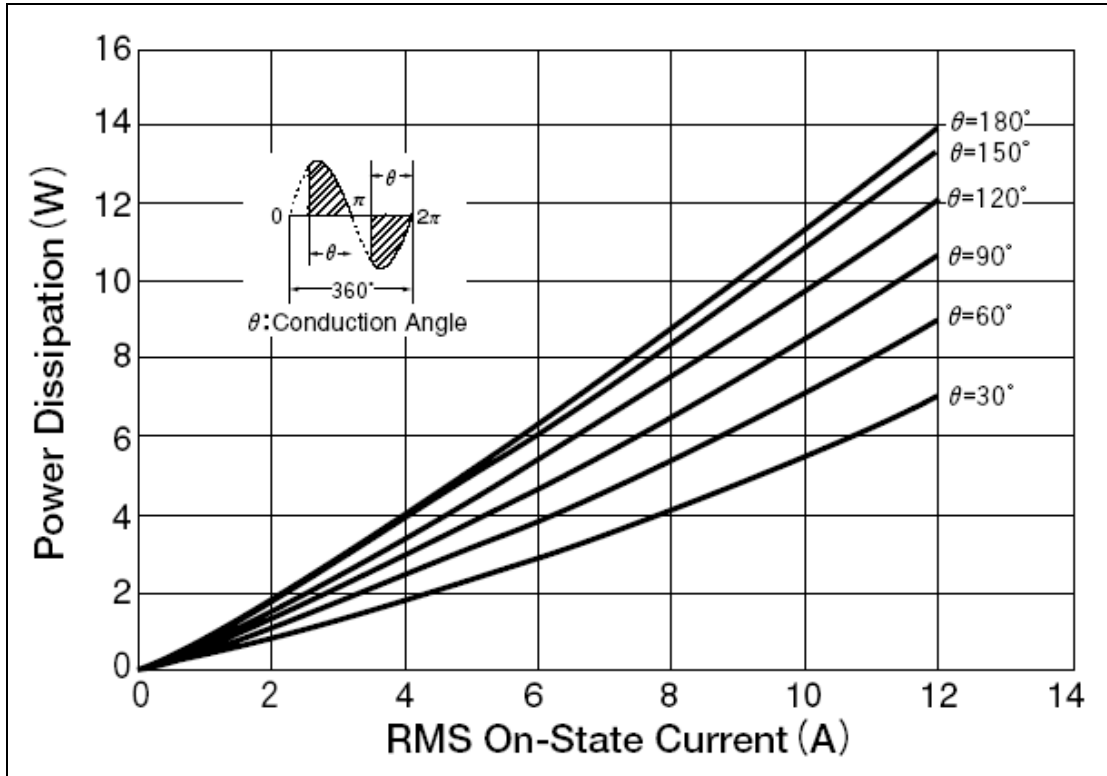
ON-STATE CHARACTERISTICS (MAX)



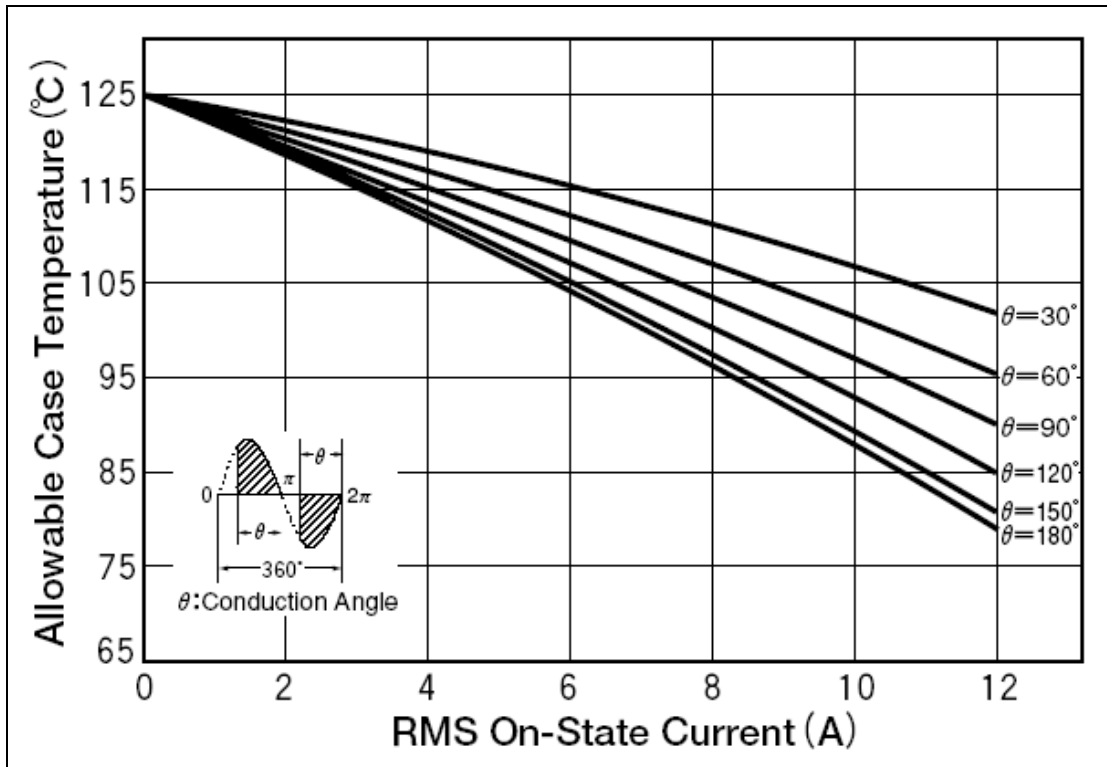


TYPICAL CHARACTERISTICS – CONTINUED

RMS ON-STATE CURRENT VS MAXIMUM POWER DISSIPATION



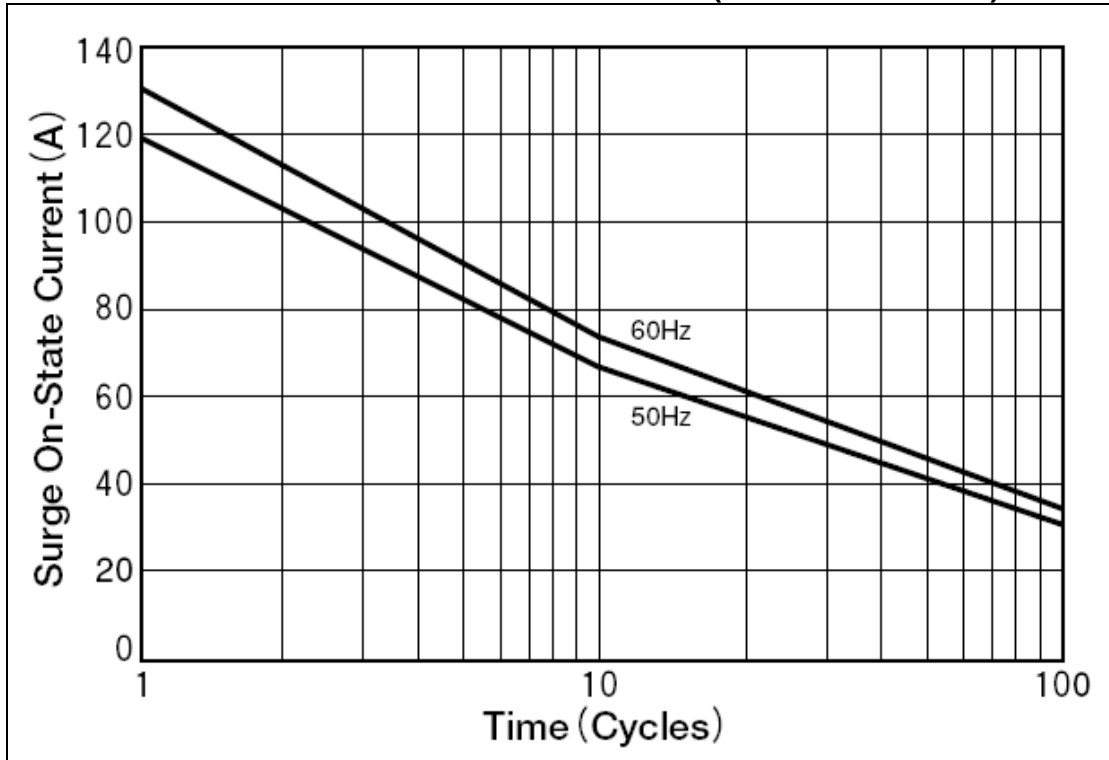
RMS ON-STATE VS ALLOWABLE CASE TEMPERATURE



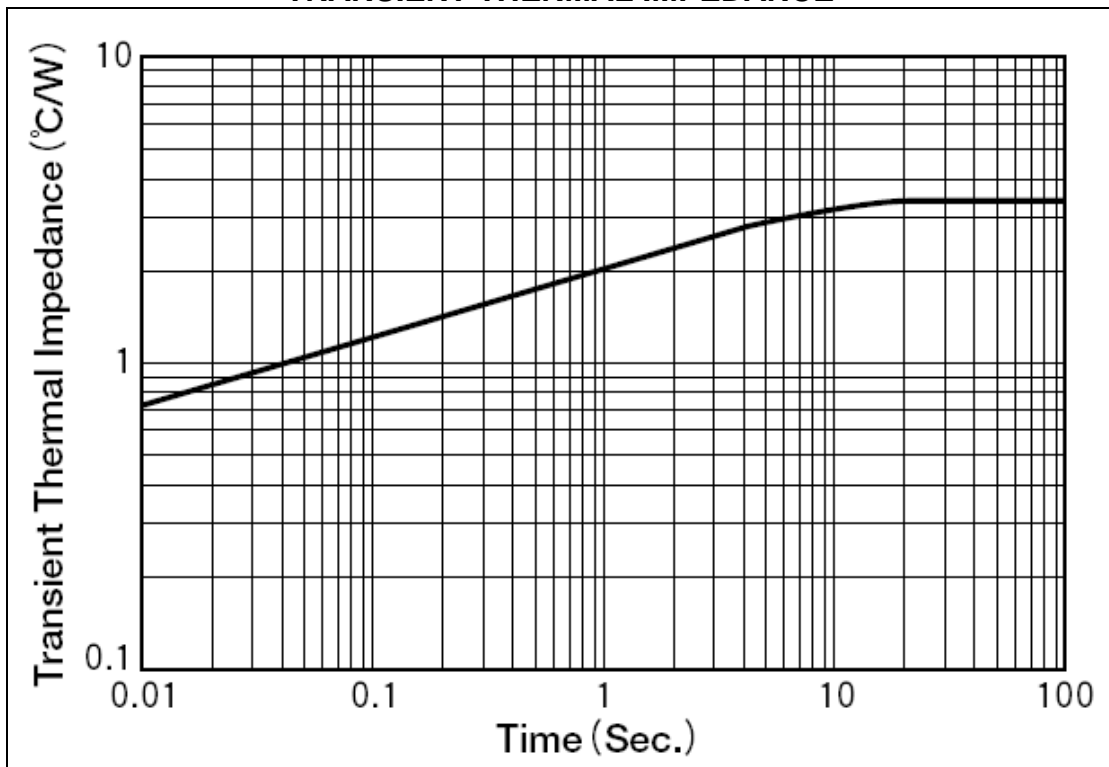


TYPICAL CHARACTERISTICS – CONTINUED

SURGE ON-STATE CURRENT RATING (NON-REPETITIVE)



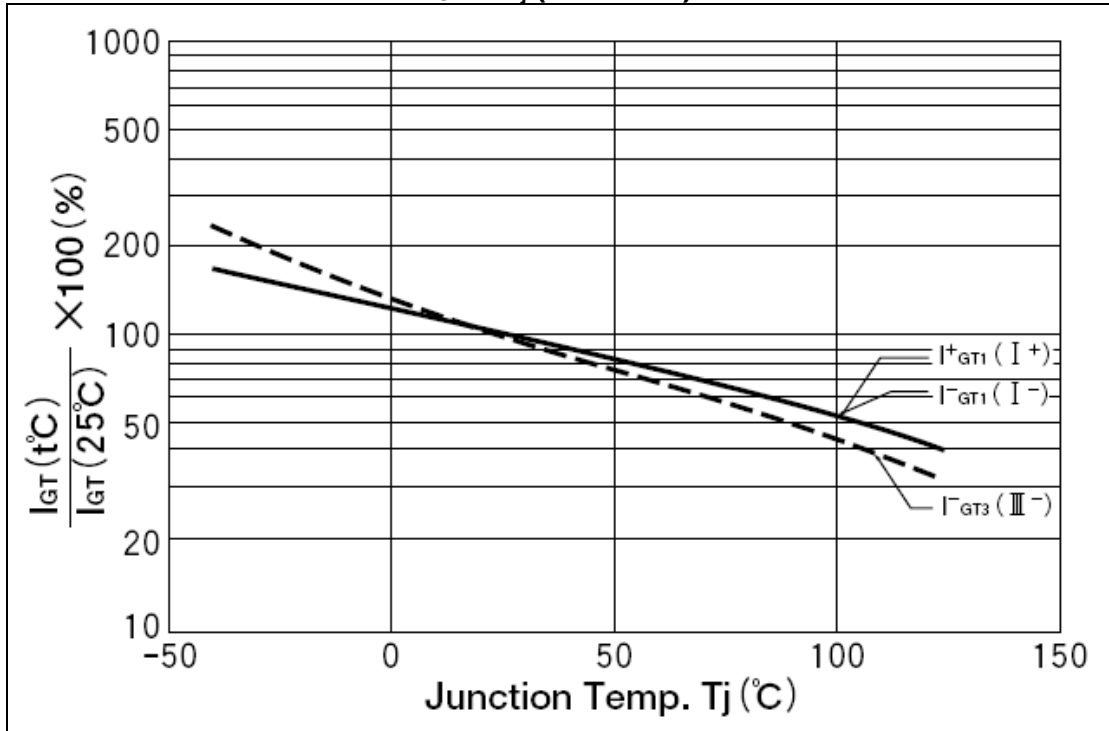
TRANSIENT THERMAL IMPEDANCE



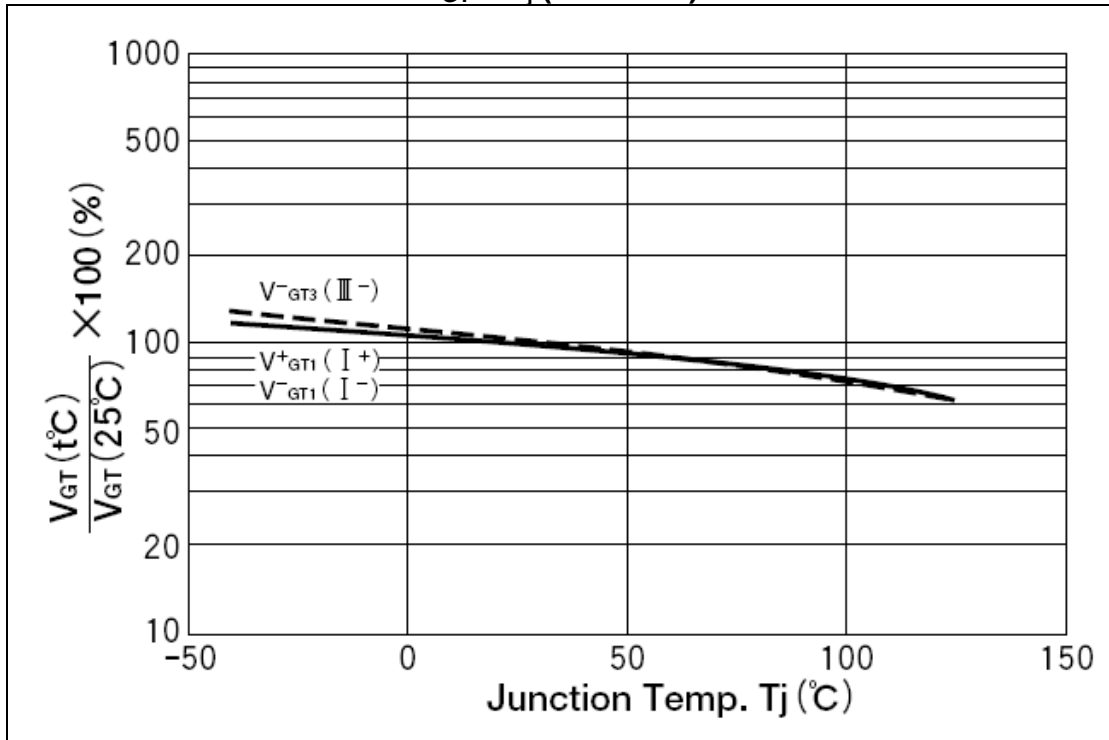


TYPICAL CHARACTERISTICS – CONTINUED

$I_{GT} - T_j$ (TYPICAL)



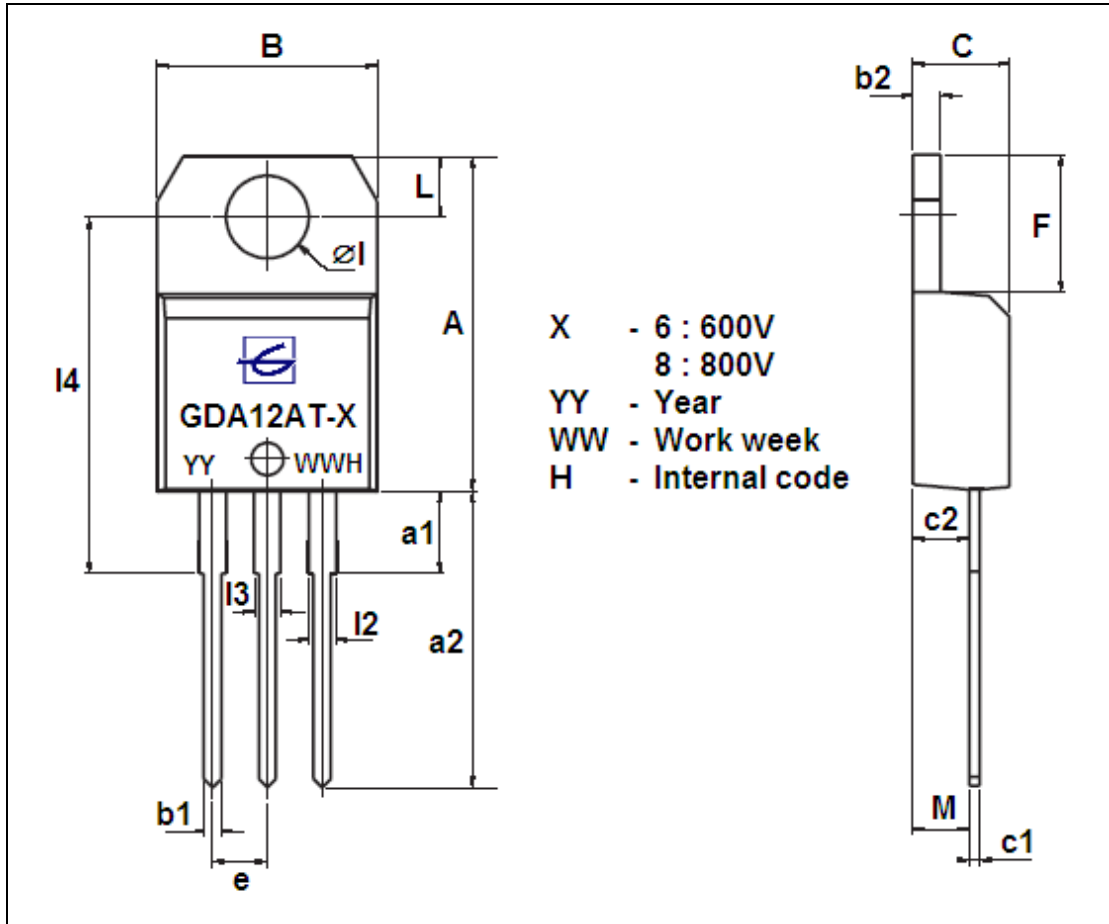
$V_{GT} - T_j$ (TYPICAL)





PACKAGING

DIMENSIONS AND MARKING FOR TO-220 PACKAGE



TO-220		A	a1	a2	B	b1	b2	C	c1	c2
MM	Min	15.20		13.00	10.00	0.61	1.23	4.40	0.49	2.40
	Typ		3.75							
	Max	15.90		14.00	10.40	0.88	1.32	4.60	0.70	2.72
INCHES	Min	0.598		0.512	0.394	0.024	0.048	0.173	0.019	0.094
	Typ		0.148							
	Max	0.626		0.551	0.409	0.035	0.052	0.181	0.028	0.107

TO-220		e	F	L	I	I2	I3	I4	M
MM	Min	2.40	3.00	2.65	3.75	1.14	1.14	15.8	
	Typ							16.4	2.6
	Max	2.72	6.60	2.95	3.85	1.70	1.70	16.8	
INCHES	Min	0.094	0.118	0.104	0.148	0.045	0.045	0.622	
	Typ							0.646	0.102
	Max	0.107	0.260	0.116	0.152	0.067	0.067	0.661	



ORDERING INFORMATION

PART NUMBER	V_{DRM}/V_{RRM} (V)	PACKAGE
GDA12AT-6	600	TO-220
GDA12AT-8	800	TO-220

The information presented in this data sheet is believed to be accurate and reliable. Application circuits shown are typical examples illustrating the operation of the device.

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Reference to products of other manufacturers are solely for convenience and do not imply total equivalency of design, performance, or otherwise.