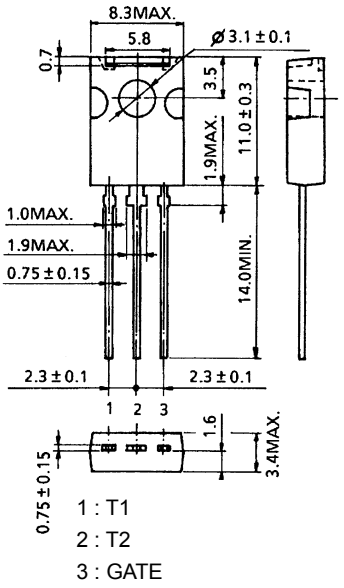
TOSHIBA BI−DIRECTIONAL TRIODE THYRISTOR SILICON PLANAR TYPE

SM2G54,SM2L54

AC POWER CONTROL APPLICATIONS

- Repetitive Peak Off−State Voltage : V_{DRM} = 800V
- R.M.S. On−State Current : $I_{T\ (RMS)}$ = 2A
- High Commutation (dv / dt) : (dv / dt) c = 5V / μs (Min.)

Unit: mm



JEDEC	−
JEITA	−
TOSHIBA	−

Weight: 0.82g

MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off−State Voltage	V_{DRM}	800	V
R.M.S. On−State Current (Full Sine Waveform)	$I_{T\ (RMS)}$	2	A
Peak One Cycle Surge On−State Current (Non-Repetitive)	I_{TSM}	8 (50Hz)	A
		8.8 (60Hz)	
I^2t Limit Value	I^2t	0.32	A^2s
Critical Rate of Rise of On−State Current (Note)	di / dt	50	A / μs
Peak Gate Power Dissipation	P_{GM}	3	W
Average Gate Power Dissipation	$P_{G\ (AV)}$	0.3	W
Peak Gate Voltage	V_{FGM}	10	V
Peak Gate Current	I_{GM}	1.6	A
Junction Temperature	T_j	−40~125	°C
Storage Temperature Range	T_{stg}	−40~125	°C

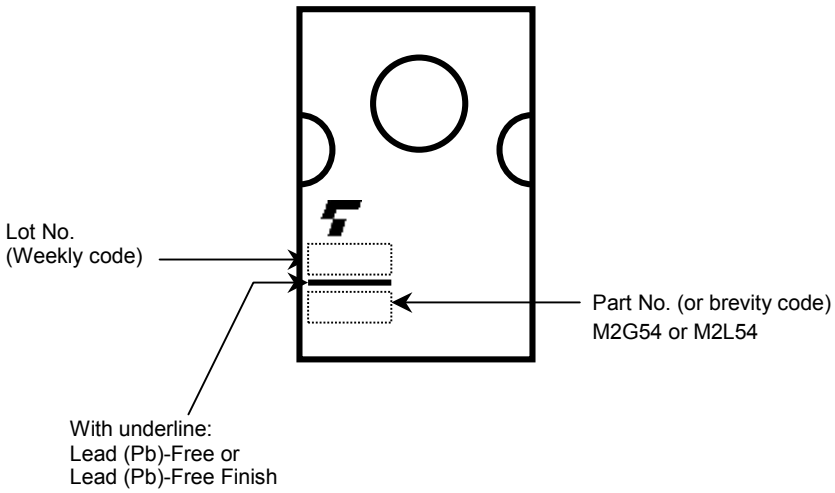
Note: di / dt test condition

V_{DRM} = 400V, $I_{TM} \leq$ 3A, $t_{gw} \geq$ 10μs, $t_{gr} \leq$ 250ns, $i_{gp} = I_{GT} \times 2.0$

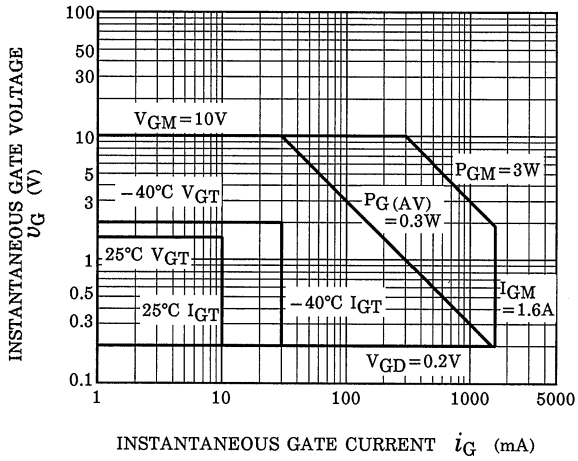
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION		MIN	TYP.	MAX	UNIT
Repetitive Peak Off−State Current		I_{DRM}	V_{DRM} = 800V		–	–	20	μA
Gate Trigger Voltage	I	V_{GT}	V_D = 12V, R_L = 20Ω	T2 (+) , Gate (+)	–	–	1.5	V
	II			T2 (+) , Gate (−)	–	–	1.5	
	III			T2 (−) , Gate (−)	–	–	1.5	
Gate Trigger Current	I	I_{GT}	V_D = 12V, R_L = 20Ω	T2 (+) , Gate (+)	–	–	10	mA
	II			T2 (+) , Gate (−)	–	–	10	
	III			T2 (−) , Gate (−)	–	–	10	
Peak On−State Voltage		V_{TM}	I_{TM} = 3A		–	–	2.0	V
Gate Non−Trigger Voltage		V_{GD}	V_D = 800V, Tc = 125°C		0.2	–	–	V
Holding Current		I_H	V_D = 12V, I_{TM} = 1A		–	–	10	mA
Thermal Resistance		$R_{th\ (j-a)}$	Junction to Ambient, AC		–	–	83	°C / W
Critical Rate of Rise of Off−State Voltage		dv / dt	V_{DRM} = 800V, T_j = 125°C Exponential Rise		50	–	–	V / μs
Critical Rate of Rise of Off−State Voltage at Communication		(dv / dt) c	V_{DRM} = 400V, T_j = 80°C (di / dt) c = − 0.5A / ms		5	–	–	V / μs

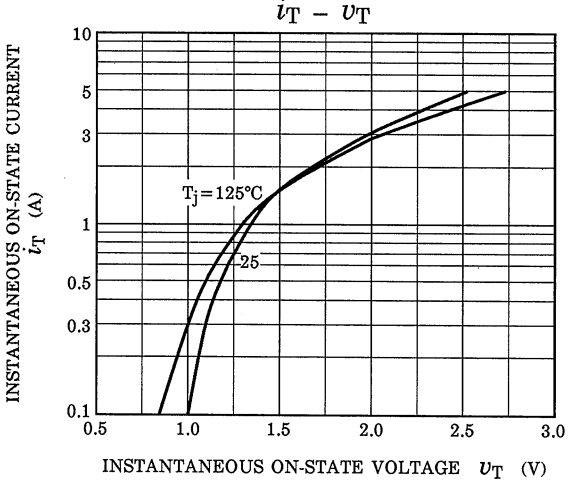
MARKING



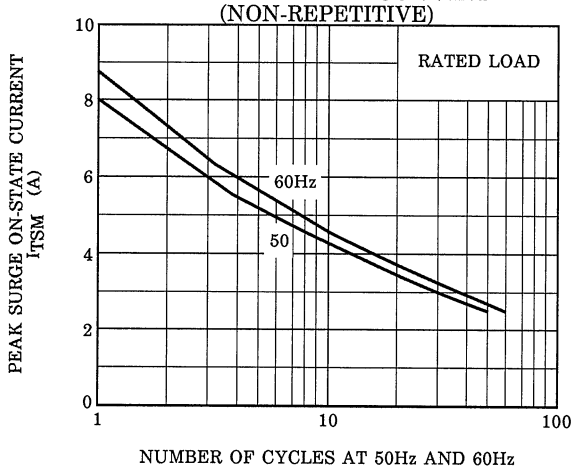
GATE TRIGGER CHARACTERISTIC



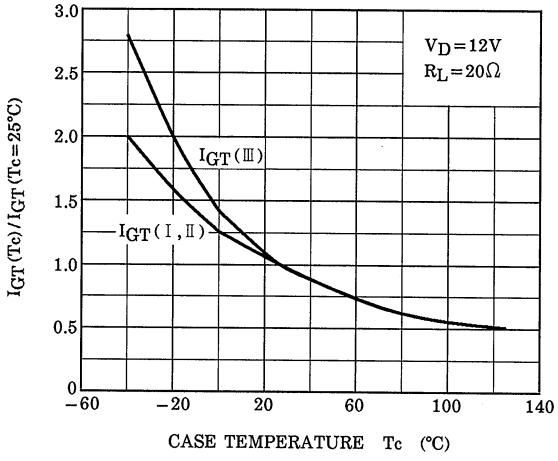
$i_T - v_T$



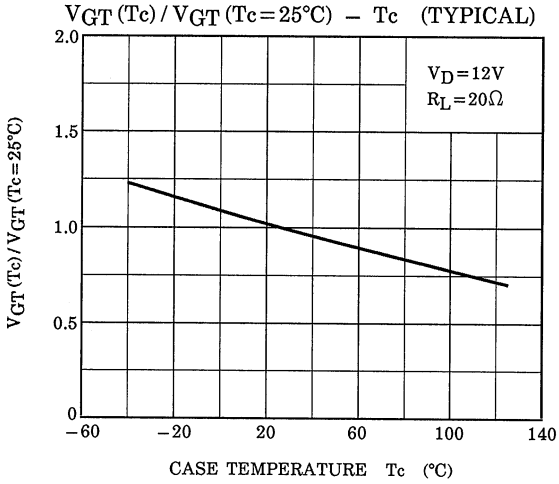
SURGE ON-STATE CURRENT (NON-REPETITIVE)



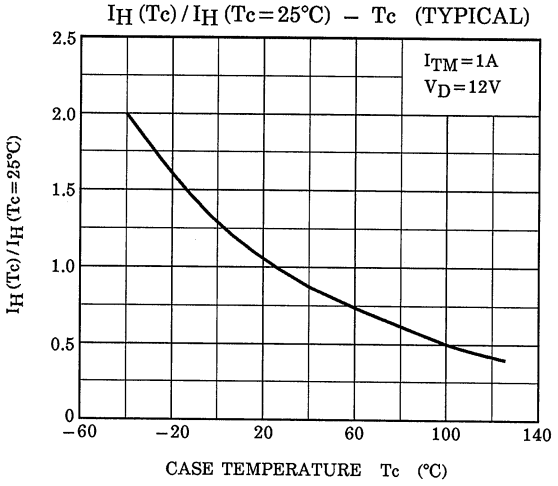
I_{GT} (Tc) / I_{GT} (Tc=25°C) − Tc (TYPICAL)



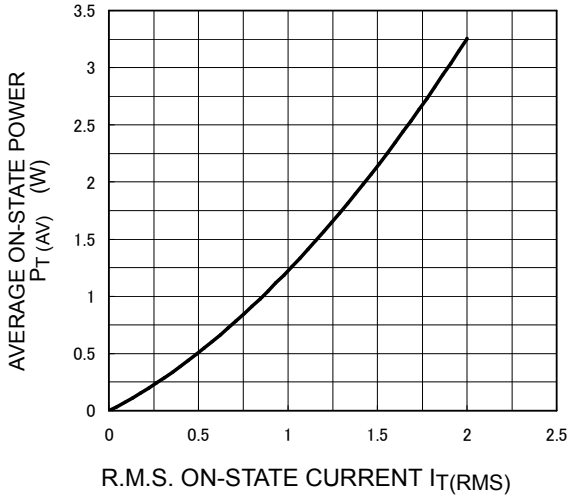
V_{GT} (Tc) / V_{GT} (Tc=25°C) − Tc (TYPICAL)



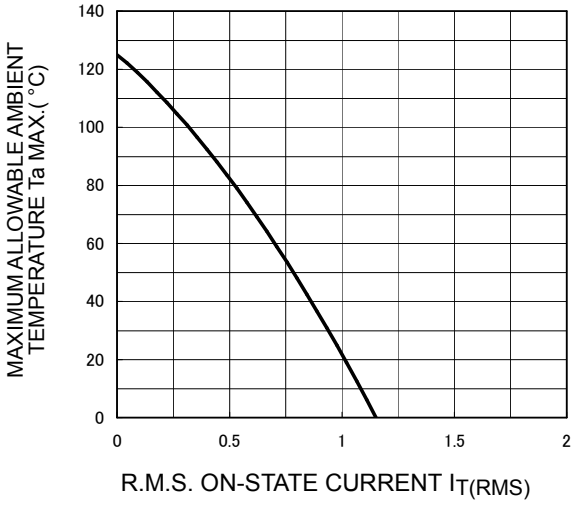
I_H (Tc) / I_H (Tc=25°C) − Tc (TYPICAL)



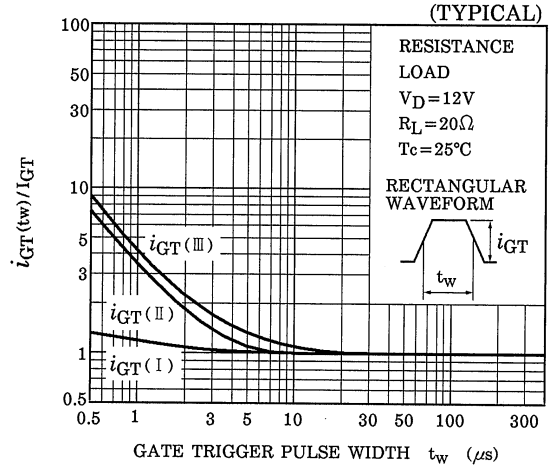
$P_{T(AV)}$ – $I_{T(RMS)}$



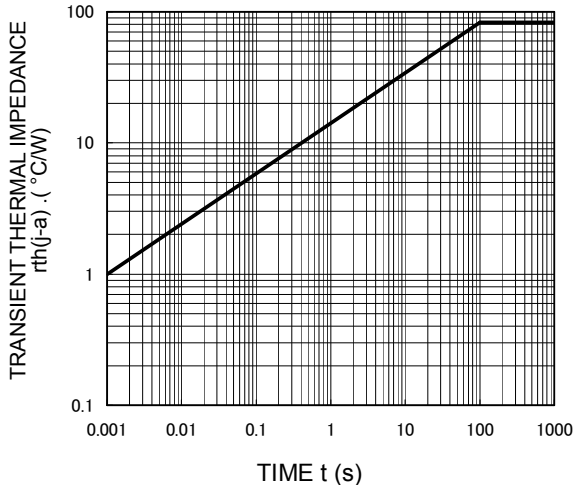
$Ta\ MAX_{T(AV)}$ – $I_{T(RMS)}$



PULSE TRIGGER CHARACTERISTIC
(TYPICAL)



TRANSIENT THERMAL IMPEDANCE
(JUNCTION TO AMBIENT)



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