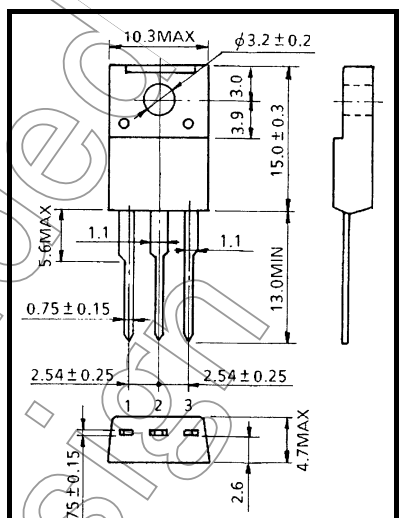
TOSHIBA THYRISTOR SILICON PLANAR TYPE

SF10GZ47, SF10JZ47

MEDIUM POWER CONTROL APPLICATIONS

- Repetitive Peak Off−State Voltage: V_{DRM} = 400V,600V
  Repetitive Peak Reverse Voltage: V_{RRM} = 400V,600V
- Average On−State Current: $I_{T\ (AV)}$ = 10A
- Isolation Voltage: V_{Isol} = 1500V AC

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	13-10H1B

Weight: 1.7 g (typ.)

MAXIMUM RATINGS

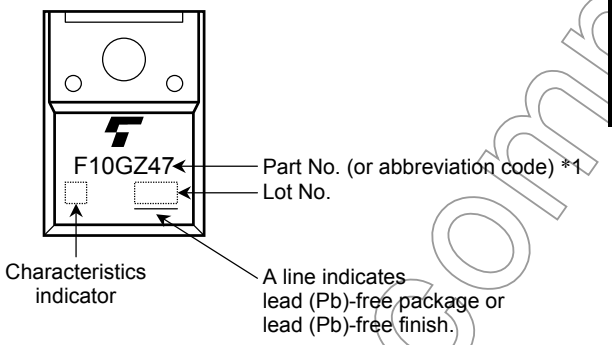
CHARACTERISTIC		SYMBOL	RATING	UNIT
Repetitive Peak Off−State Voltage and Repetitive Peak Reverse Voltage	SF10GZ47	V_{DRM} V_{RRM}	400	V
	SF10JZ47		600	
Non−Repetitive Peak Reverse Voltage (Non−Repetitive<5ms, T_j = 0~125°C)	SF10GZ47	V_{RSM}	500	V
	SF10JZ47		720	
Average On−State Current (Half Sine Waveform Tc = 66°C)		$I_{T\ (AV)}$	10	A
R.M.S. On−State Current		$I_{T\ (RMS)}$	16	A
Peak One Cycle Surge On-State Current (Non−Repetitive)		I_{TSM}	160 (50Hz)	A
			176 (60Hz)	
I^2t Limit Value		I^2t	125	A^2s
Critical Rate of Rise of On-State Current (Note 1)		di / dt	100	A / μs
Peak Gate Power Dissipation		P_{GM}	5	W
Average Gate Power Dissipation		$P_{G\ (AV)}$	0.5	W
Peak Forward Gate Voltage		V_{FGM}	10	V
Peak Reverse Gate Voltage		V_{RGM}	−5	V
Peak Forward Gate Current		I_{GM}	2	A
Junction Temperature		T_j	−40~125	°C
Storage Temperature Range		T_{stg}	−40~125	°C
Isolation Voltage (AC, t = 1min.)		V_{Isol}	1500	V

Note 1: di / dt test condition
V_{DRM} = 0.5 × Rated
I_{TM} ≤ 30A
t_{gw} ≥ 10μs
t_{gr} ≤ 250ns
i_{gp} = I_{GT} × 2.0

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

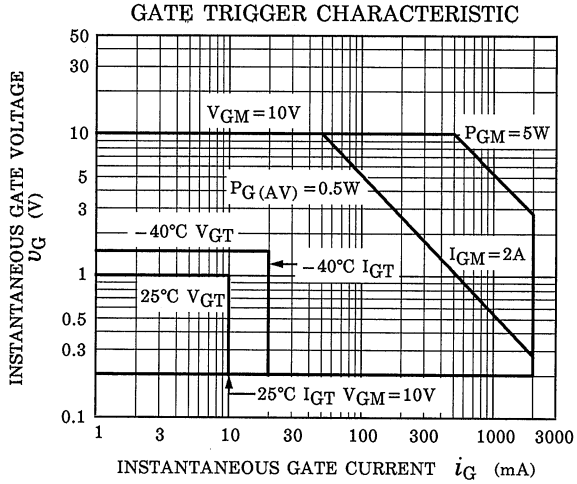
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Repetitive Peak Off−State Current and Repetitive Peak Reverse Current	I_{DRM} I_{RRM}	V_{DRM} = V_{RRM} = Rated	—	—	10	μA
Peak On−State Voltage	V_{TM}	I_{TM} = 30A	—	—	1.5	V
Gate Trigger Voltage	V_{GT}	V_D = 6V, R_L = 10Ω	—	—	1.0	V
Gate Trigger Current	I_{GT}		—	—	10	mA
Gate Non−Trigger Voltage	V_{GD}	V_D = Rated × 2 / 3, Tc = 125°C	0.2	—	—	V
Critical Rate of Rise of Off−State Voltage	dv / dt	V_{DRM} = Rated, Tc = 125°C Exponential Rise	—	50	—	V / μs
Holding Current	I_H	V_D = 6V, I_{TM} = 1A	—	—	40	mA
Latching current	I_L	V_D = 6V, f = 50Hz, t_{gw} = 50μs i_G = 30mA	—	—	50	mA
Thermal Resistance	$R_{th\ (j-c)}$	Junction to Case	—	—	3.4	°C / W

MARKING

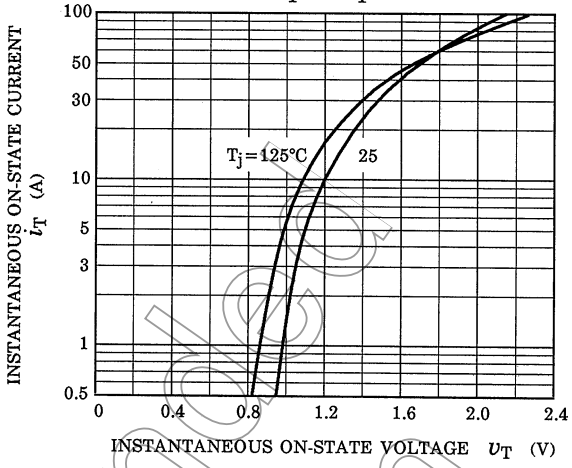


*1	Part No. (or abbreviation code)	Part No.
	F10GZ47	SF10GZ47
	F10JZ47	SF10JZ47

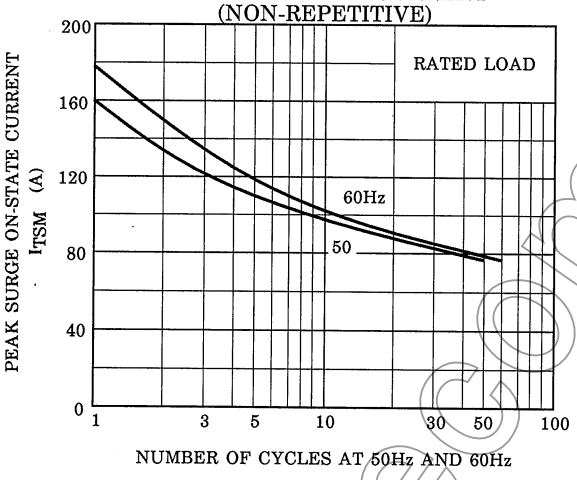
GATE TRIGGER CHARACTERISTIC



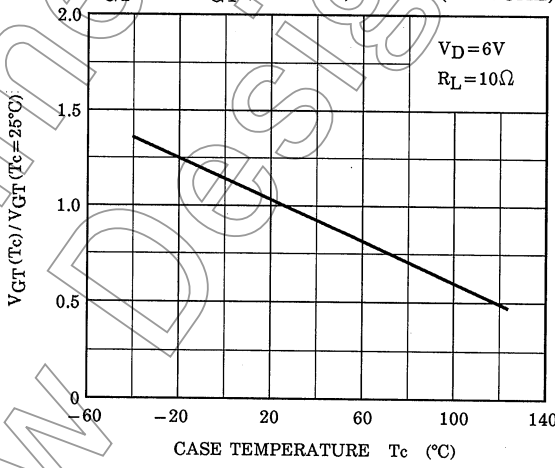
$i_T - v_T$



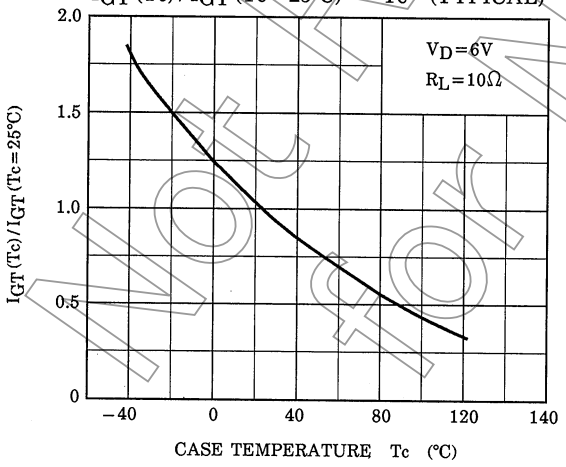
SURGE ON-STATE CURRENT (NON-REPETITIVE)



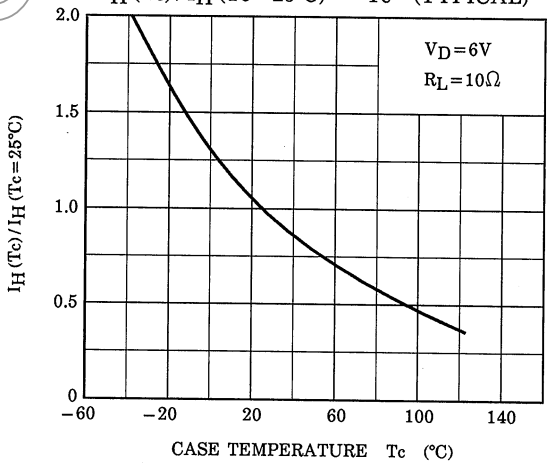
V_{GT} (Tc) / V_{GT} (Tc = 25°C) – Tc (TYPICAL)



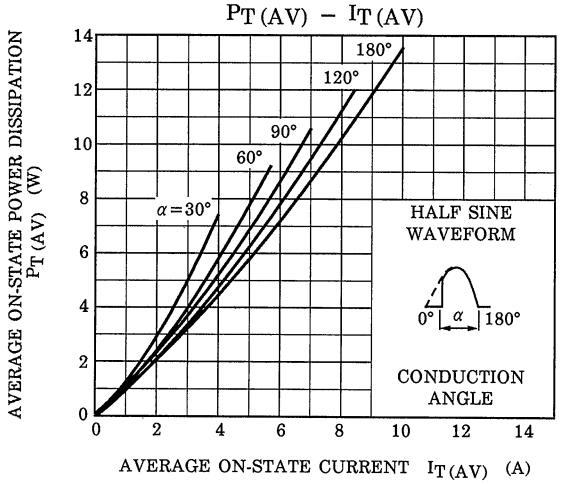
I_{GT} (Tc) / I_{GT} (Tc = 25°C) – Tc (TYPICAL)



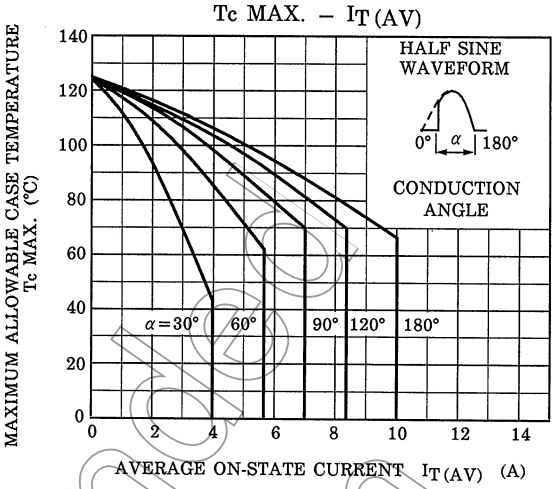
I_H (Tc) / I_H (Tc = 25°C) – Tc (TYPICAL)



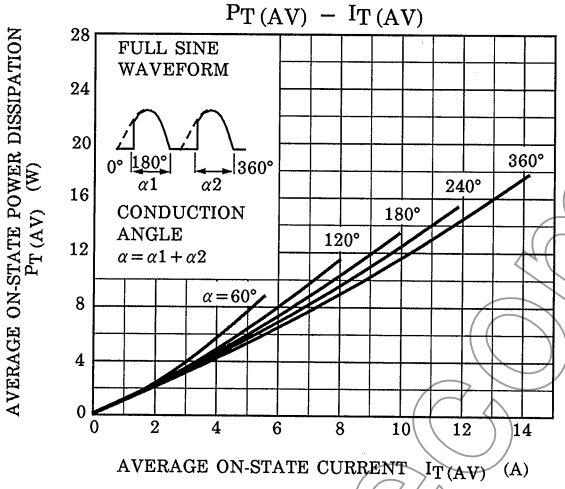
$P_{T(AV)}$ – $I_{T(AV)}$



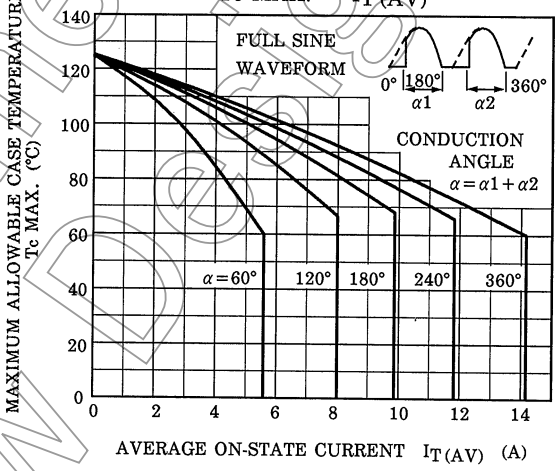
Tc MAX. – $I_{T(AV)}$



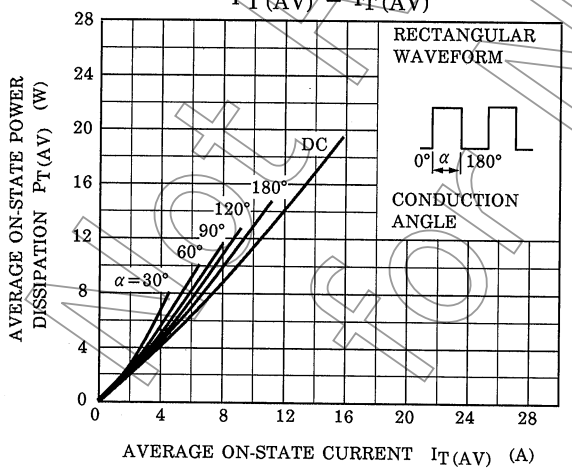
$P_{T(AV)}$ – $I_{T(AV)}$



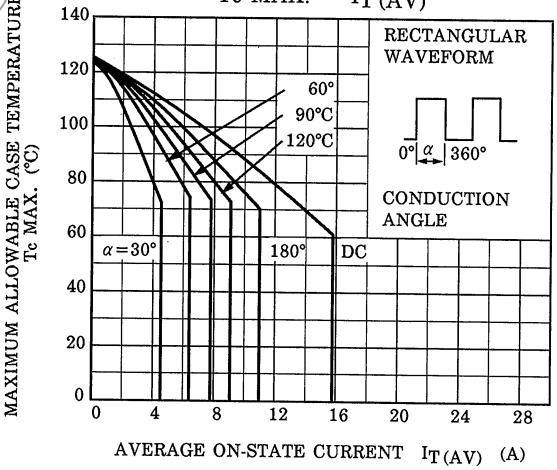
Tc MAX. – $I_{T(AV)}$



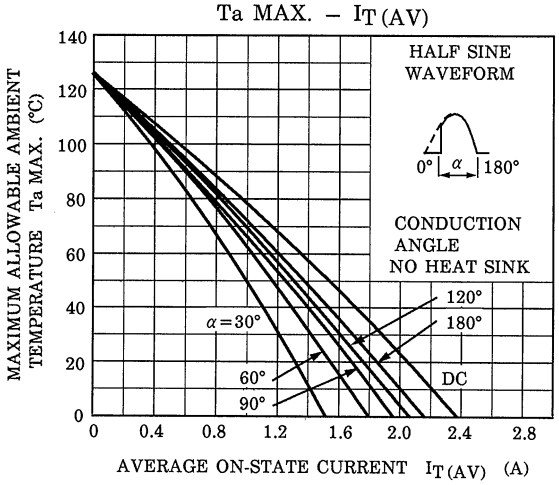
$P_{T(AV)}$ – $I_{T(AV)}$



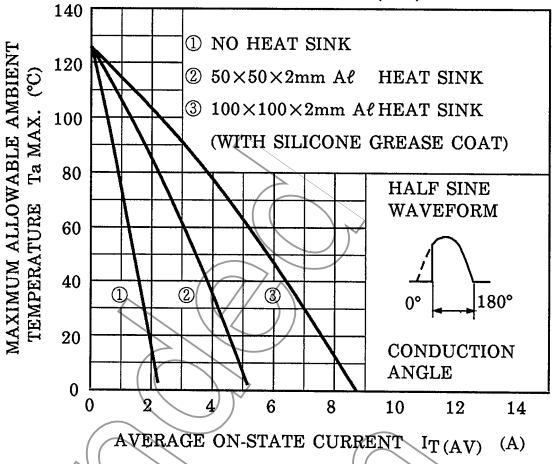
Tc MAX. – $I_{T(AV)}$



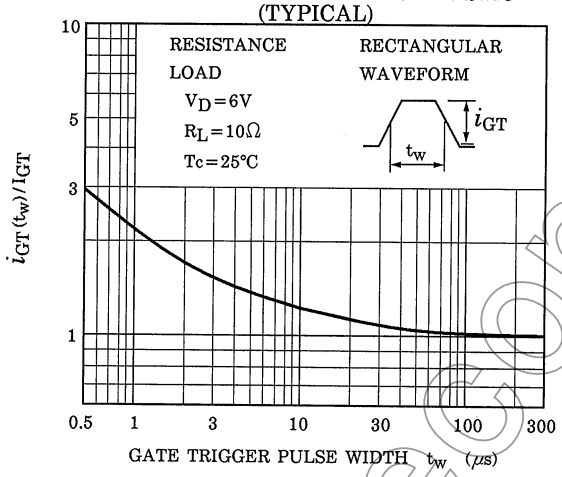
Ta MAX. – $I_{T(AV)}$



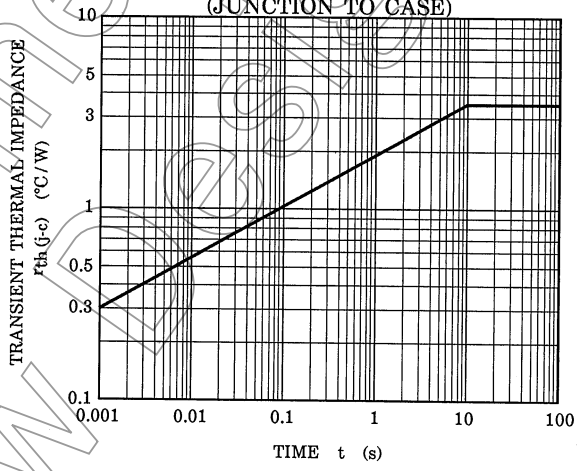
Ta MAX. – $I_{T(AV)}$



PULSE TRIGGER CHARACTERISTIC (TYPICAL)



TRANSIENT THERMAL IMPEDANCE (JUNCTION TO CASE)



RESTRICTIONS ON PRODUCT USE

20070701-EN

- The information contained herein is subject to change without notice.
- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property.
  In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the “Handling Guide for Semiconductor Devices,” or “TOSHIBA Semiconductor Reliability Handbook” etc.
- The TOSHIBA products listed in this document are intended for usage in general electronics applications (computer, personal equipment, office equipment, measuring equipment, industrial robotics, domestic appliances, etc.).These TOSHIBA products are neither intended nor warranted for usage in equipment that requires extraordinarily high quality and/or reliability or a malfunction or failure of which may cause loss of human life or bodily injury (“Unintended Usage”). Unintended Usage include atomic energy control instruments, airplane or spaceship instruments, transportation instruments, traffic signal instruments, combustion control instruments, medical instruments, all types of safety devices, etc.. Unintended Usage of TOSHIBA products listed in his document shall be made at the customer’s own risk.
- The products described in this document shall not be used or embedded to any downstream products of which manufacture, use and/or sale are prohibited under any applicable laws and regulations.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA for any infringements of patents or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any patents or other rights of TOSHIBA or the third parties.
- Please contact your sales representative for product-by-product details in this document regarding RoHS compatibility. Please use these products in this document in compliance with all applicable laws and regulations that regulate the inclusion or use of controlled substances. Toshiba assumes no liability for damage or losses occurring as a result of noncompliance with applicable laws and regulations.