

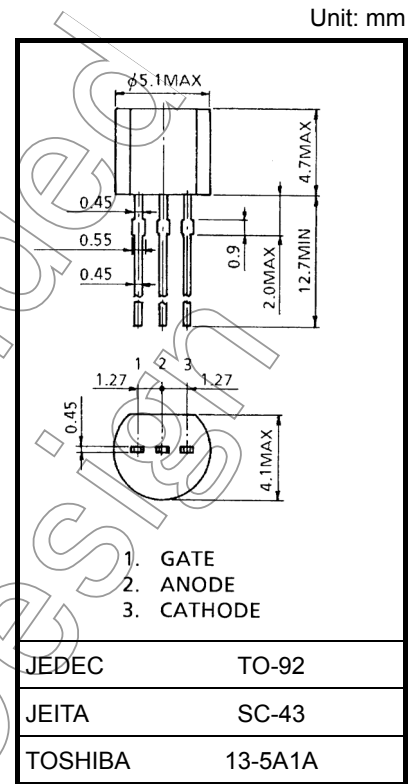
# SH0R3D42

## HIGH SPEED SWITCHING AND CONTROL APPLICATIONS

- Repetitive Peak Off-State Voltage :  $V_{DRM} = 200V$
- Average On-State Current :  $I_T (AV) = 300mA$
- Plastic Mold Type.

## ABSOLUTE MAXIMUM RATINGS

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Off-State Voltage ( $R_{GK} = 1k\Omega$ )	$V_{DRM}$	200	V
Non-Repetitive Peak Off-State Voltage ( $R_{GK} = 1k\Omega$ )	$V_{DSM}$	250	V
Average On-State Current (Half Sine Waveform $T_a = 30^\circ C$ )	$I_T (AV)$	300	mA
R.M.S On-State Current	$I_T (RMS)$	450	mA
Peak One Cycle Surge On-State Current (Non-Repetitive)	$I_{TSM}$	7 (50Hz)	A
$I^2t$ Limit Value	$I^2t$	0.3	$A^2s$
Peak Gate Power Dissipation	$P_{GM}$	0.1	W
Average Gate Power Dissipation	$P_G (AV)$	0.01	W
Peak Forward Gate Voltage	$V_{FGM}$	3.5	V
Peak Reverse Gate Voltage	$V_{RGM}$	-7	V
Peak Forward Gate Current	$I_{GM}$	125	mA
Junction Temperature	$T_j$	-40~125	$^\circ C$
Storage Temperature Range	$T_{stg}$	-40~125	$^\circ C$

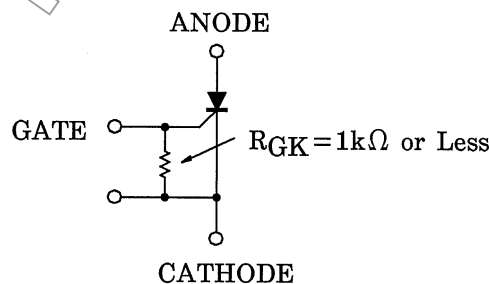


Weight: 0.2 g (typ.)

Note 1: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

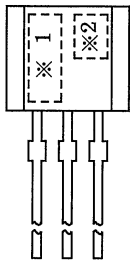
Note 2: Should be used with gate resistance as follows.

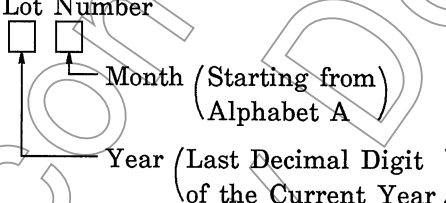


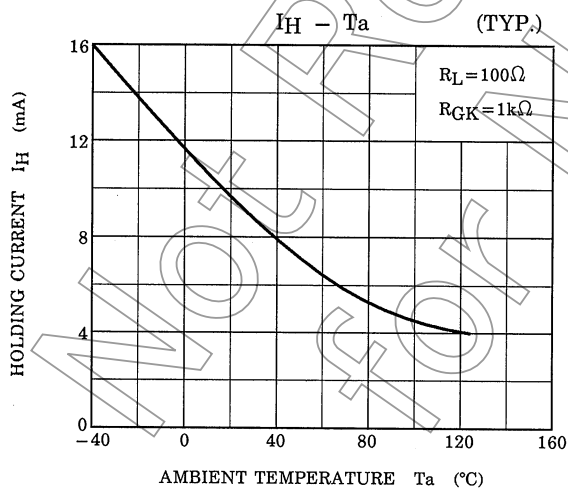
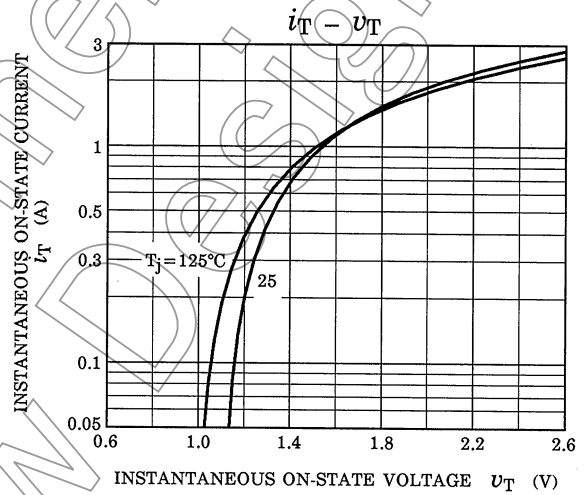
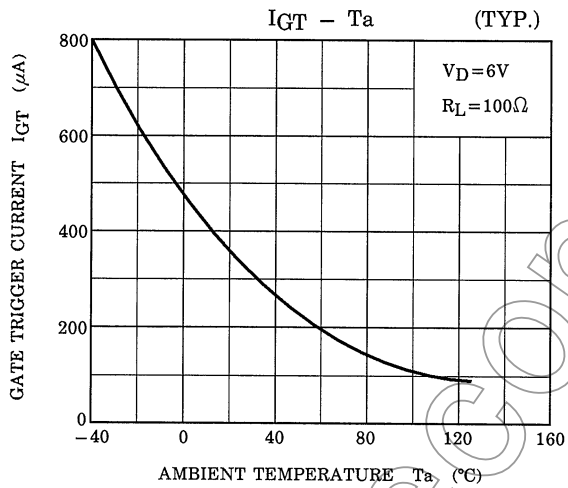
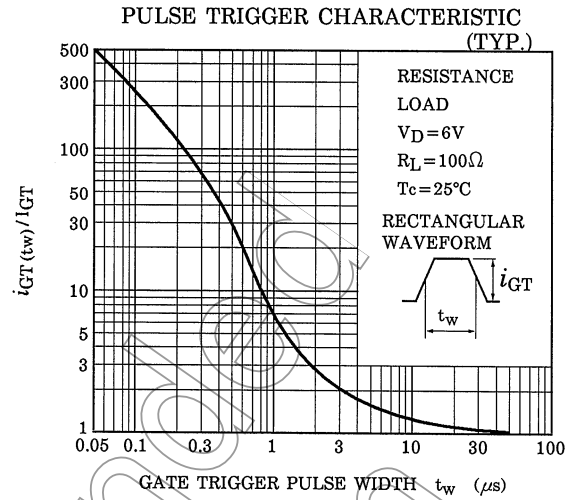
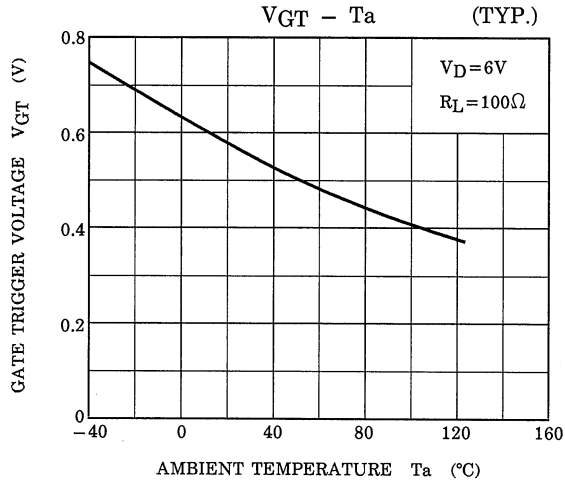
## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	MAX	UNIT
Repetitive Peak Off-State Current and Peak Reverse Current	$I_{DRM}$	$T_j = 125^\circ\text{C}$ , $V_{DRM} = \text{Rated}$ $R_{GK} = 1\text{k}\Omega$	—	100	$\mu\text{A}$
Peak On-State Voltage	$V_{TM}$	$I_{TM} = 2\text{A}$	—	1.8	V
Gate Trigger Voltage	$V_{GT}$	$V_D = 6\text{V}$ , $R_L = 100\Omega$	—	0.9	V
Gate Trigger Current	$I_{GT}$		—	1.0	mA
Gate Non-Trigger Voltage	$V_{GD}$	$V_D = \text{Rated}$ , $T_c = 110^\circ\text{C}$	0.3	—	V
Turn-On Time	$t_{gt}$	$V_D = \text{Rated}$ , $I_{TM} = 4\text{A}$ $I_G = 10\text{mA}$	—	2.0	$\mu\text{s}$
Turn-Off Time	$t_q$	$V_D = 20\text{V}$ , $I_P = 1\text{A}$ , $R_{GK} = 1\text{k}\Omega$	—	6.0	$\mu\text{s}$
Critical Rate of Rise of Off-State Voltage	$dv/dt$	$V_D = \text{Rated}$ , $R_{GK} = 1\text{k}\Omega$ $T_c = 110^\circ\text{C}$ , Exponential Rise	15	—	V / $\mu\text{s}$
Holding Current	$I_H$	$R_L = 100\Omega$ , $R_{GK} = 1\text{k}\Omega$	—	15	mA
Thermal Resistance	$R_{th(j-c)}$	Junction to Ambient	—	250	$^\circ\text{C} / \text{W}$

## MARKING



NUMBER	SYMBOL	MARK
*1	TYPE SH0R3D42	H0R3D
*2	Lot Number 	Example 8A : January 1998 8B : February 1998 8L : December 1998



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20070701-EN

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