

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE (DARLINGTON)

# 2SD2604

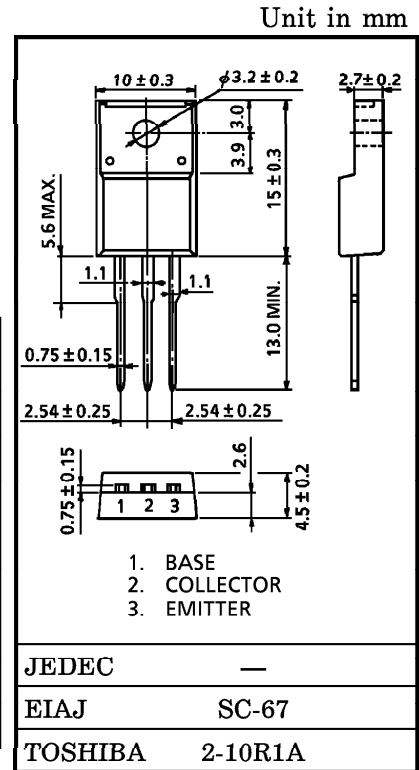
HIGH POWER SWITCHING APPLICATIONS

HAMMER DRIVE, PULSE MOTOR DRIVE APPLICATIONS

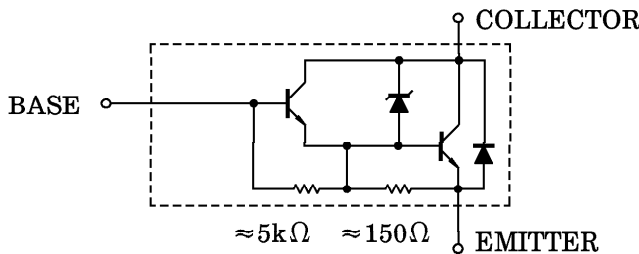
- High DC Current Gain :  $h_{FE} = 2000$  (Min.)
- Low Saturation Voltage :  $V_{CE(sat)} = 1.5V$  (Max.)

MAXIMUM RATINGS ( $T_a = 25^\circ C$ )

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		$V_{CBO}$	95	V
Collector-Emitter Voltage		$V_{CEO}$	$110 \pm 15$	V
Emitter-Base Voltage		$V_{EBO}$	5	V
Collector Current	DC	$I_C$	5	A
	Pulse	$I_{CP}$	10	A
Base Current		$I_B$	0.7	A
Collector Power Dissipation	$T_a = 25^\circ C$	$P_C$	2.0	W
	$T_c = 25^\circ C$		20	
Junction Temperature		$T_j$	150	$^\circ C$
Storage Temperature Range		$T_{stg}$	$-55 \sim 150$	$^\circ C$



EQUIVALENT CIRCUIT



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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		$I_{CBO}$	$V_{CB} = 90V, I_E = 0$	—	—	100	$\mu A$
Emitter Cut-off Current		$I_{EBO}$	$V_{EB} = 6V, I_C = 0$	0.75	—	3.0	$\mu A$
Collector-Emitter Breakdown Voltage		$V_{(BR) CEO}$	$I_C = 10mA, I_B = 0$	95	110	125	V
DC Current Gain		$h_{FE} (1)$	$V_{CE} = 3V, I_C = 2A$	2000	—	15000	
		$h_{FE} (2)$	$V_{CE} = 3V, I_C = 5A$	1000	—	—	
Collector-Emitter Saturation Voltage		$V_{CE (sat)}$	$I_C = 2A, I_B = 4mA$	—	0.9	1.5	V
Base-Emitter Saturation Voltage		$V_{BE (sat)}$	$I_C = 2A, I_B = 4mA$	—	1.5	2.5	V
Switching Time	Turn-on Time	$t_{on}$	<p> <math>I_{B1} = -I_{B2} = 4mA</math>  <math>V_{CC} = 40V</math>                      DUTY CYCLE <math>\leq 1\%</math> </p>	—	0.5	—	$\mu s$
	Storage Time	$t_{stg}$		—	5.0	—	
	Fall Time	$t_f$		—	0.7	—	

