

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE

**2SC4157**SWITCHING REGULATOR AND HIGH VOLTAGE SWITCHING  
APPLICATIONS

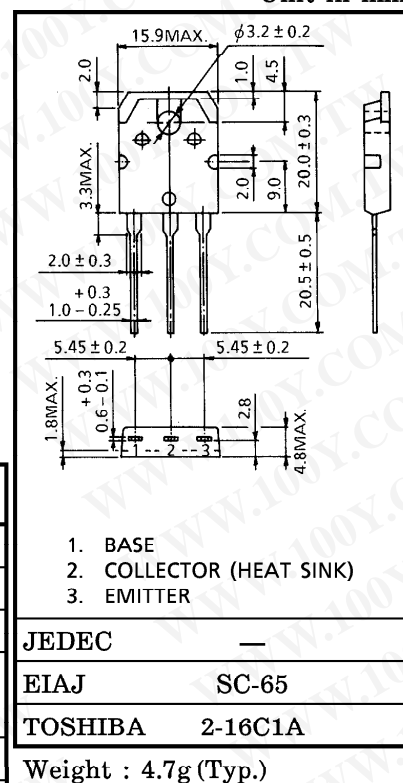
HIGH SPEED DC-DC CONVERTER APPLICATIONS

- High Speed Switching  
:  $t_r = 0.5\mu s$  (Max.),  $t_f = 0.5\mu s$  (Max.) ( $I_C = 5A$ )
- High Collector Breakdown Voltage :  $V_{CEO} = 450V$

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

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		$V_{CBO}$	600	V
Collector-Emitter Voltage		$V_{CEO}$	450	V
Emitter-Base Voltage		$V_{EBO}$	8	V
Collector Current	DC	$I_C$	10	A
	Pulse	$I_{CP}$	20	
Base Current		$I_B$	5	A
Collector Power Dissipation ( $T_c = 25^\circ C$ )		$P_C$	100	W
Junction Temperature		$T_j$	150	$^\circ C$
Storage Temperature Range		$T_{stg}$	-55~150	$^\circ C$

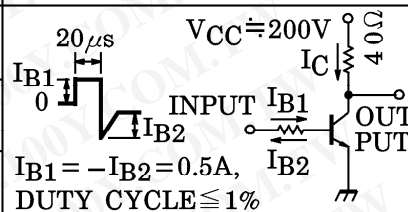
Unit in mm



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

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		$I_{CBO}$	$V_{CB} = 500\text{V}$ , $I_E = 0$	—	—	100	$\mu\text{A}$
Emitter Cut-off Current		$I_{EBO}$	$V_{EB} = 8\text{V}$ , $I_C = 0$	—	—	1	mA
Collector-Base Breakdown Voltage		$V_{(BR)CBO}$	$I_C = 1\text{mA}$ , $I_E = 0$	600	—	—	V
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	$I_C = 10\text{mA}$ , $I_B = 0$	450	—	—	V
DC Current Gain		$h_{FE}$	$V_{CE} = 5\text{V}$ , $I_C = 5\text{A}$	15	—	—	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_C = 5\text{A}$ , $I_B = 1\text{A}$	—	—	1.0	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	$I_C = 5\text{A}$ , $I_B = 1\text{A}$	—	—	2.0	V
Switching Time	Turn-on Time	$t_r$	 <p> <math>V_{CC} = 200\text{V}</math>  <math>I_C</math>  <math>40\Omega</math>  <math>I_{B1}</math>  <math>I_{B2}</math>  <math>I_{B1} = -I_{B2} = 0.5\text{A}</math>  <math>\text{DUTY CYCLE} \leq 1\%</math> </p>	—	—	0.5	$\mu\text{s}$
	Storage Time	$t_{stg}$		—	—	2.5	
	Fall Time	$t_f$		—	—	0.5	