

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE

2SD1313

HIGH POWER AMPLIFIER APPLICATIONS

HIGH POWER SWITCHING APPLICATIONS

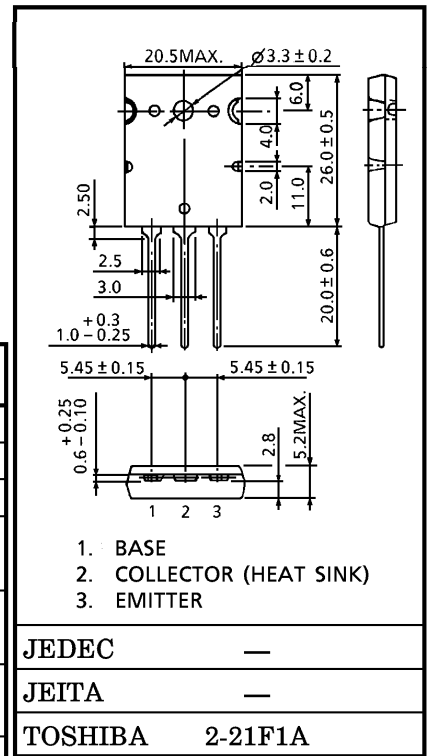
INDUSTRIAL APPLICATIONS

Unit in mm

- High Power Dissipation : $P_C=200W$ ($T_c=25^\circ C$)
- High Collector Current : $I_C=25A$ (DC)
- High Speed Switching : $t_f=0.5\mu s$ (Typ.) ($I_C=15A$)
- Low Saturation Voltage : $V_{CE(sat)}=1.0V$ (Max.) ($I_C=15A$)

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CB0}	800	V
Collector-Emitter Voltage	V_{CEO}	350	V
Emitter-Base Voltage	V_{EB0}	7	V
Collector Current	DC	I_C	25
	Pulse	I_{CP}	35
Base Current	DC	I_B	10
	Pulse	I_{BP}	15
Collector Power Dissipation ($T_c = 25^\circ C$)	P_C	200	W
Junction Temperature	T_j	150	$^\circ C$
Storage Temperature Range	T_{stg}	-55~150	$^\circ C$



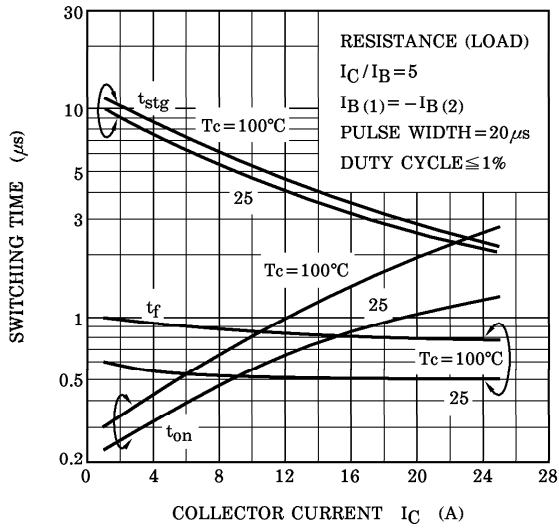
JEDEC	—
JEITA	—
TOSHIBA	2-21F1A

Weight : 9.75g (Typ.)

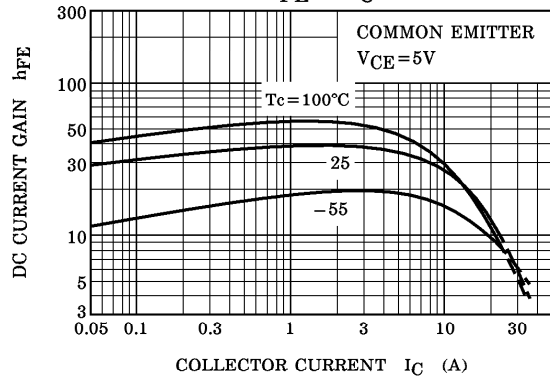
ELECTRICAL CHARACTERISTICS (Tc = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		ICBO	V _{CB} = 800V, I _E = 0	—	—	1	mA
Emitter Cut-off Current		IEBO	V _{EB} = 7V, I _C = 0	—	—	1	mA
Collector-Emitter Breakdown Voltage		V (BR) CEO	I _C = 10mA, I _B = 0	350	—	—	V
DC Current Gain		h _{FE} (1)	V _{CE} = 5V, I _C = 1A	15	—	—	
		h _{FE} (2)	V _{CE} = 5V, I _C = 25A	6	—	—	
Collector-Emitter Saturation Voltage		V _{CE} (sat)	I _C = 15A, I _B = 3A	—	—	1.0	V
Base-Emitter Saturation Voltage		V _{BE} (sat)	I _C = 15A, I _B = 3A	—	—	1.7	V
Collector Output Capacitance		C _{ob}	V _{CB} = 50V, I _E = 0, f = 1MHz	—	170	—	pF
Transition Frequency		f _T	V _{CE} = 10V, I _C = 1A	—	6	—	MHz
Switching Time	Turn-on Time	t _{on}	<p>V_{CC} = 200V $I_C = 15A$, $I_{B1} = -I_{B2} = 3A$, DUTY CYCLE < 1%</p>	—	0.8	—	μs
	Storage Time	t _{stg}		—	3.0	—	
	Fall Time	t _f		—	—	0.5	

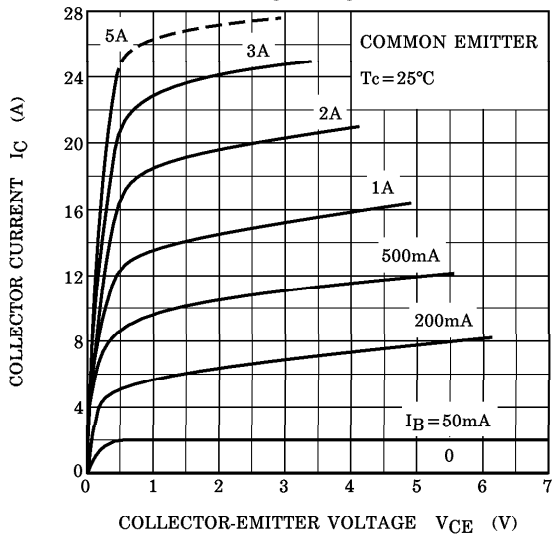
SWITCHING APPLICATIONS



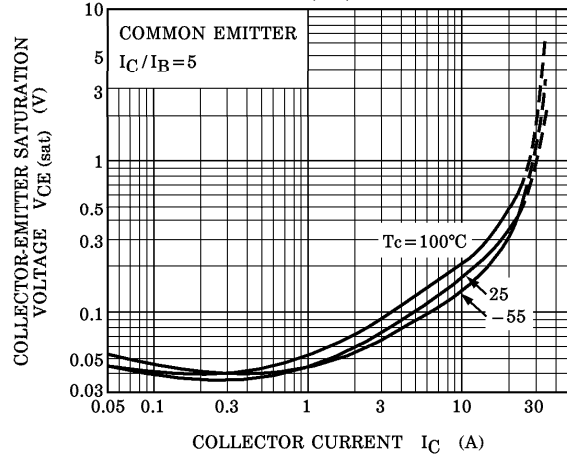
$h_{FE} - I_C$



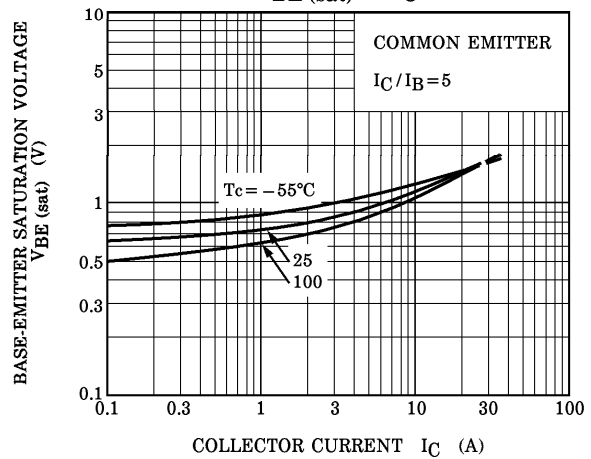
$I_C - V_{CE}$

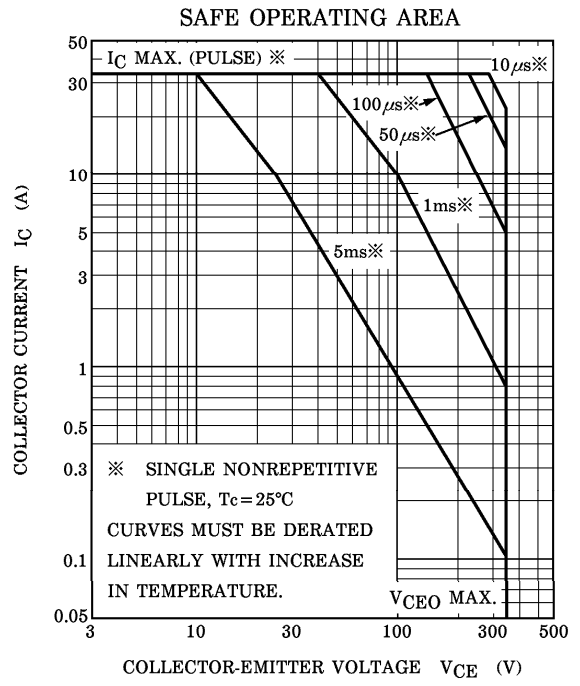
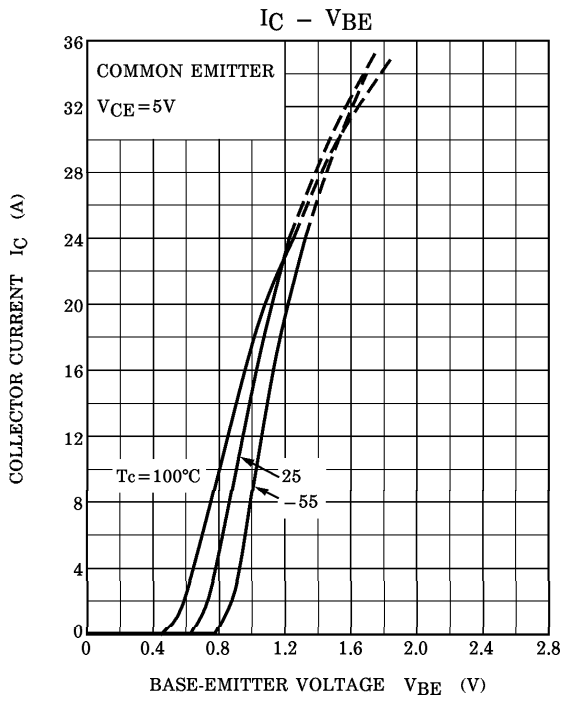


$V_{CE(sat)} - I_C$



$V_{BE(sat)} - I_C$





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