

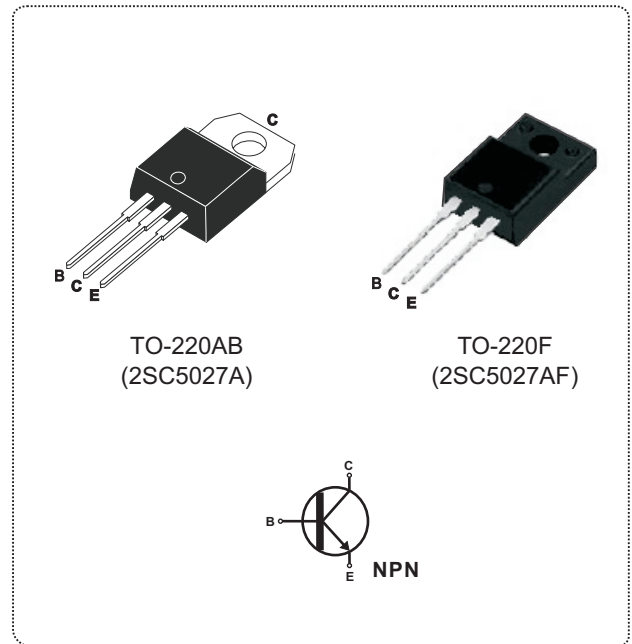
Silicon NPN triple diffusion planar transistor 3A/ 800V / 50W

FEATURES

- High-speed switching
- High breakdown voltage and high reliability
- Wide SOA (Safe Operation Area)
- TO-220 package which can be installed to the heat sink with one screw

APPLICATIONS

- Switching regulator and general purpose



ABSOLUTE MAXIMUM RATINGS ($T_c = 25^\circ\text{C}$)			
SYMBOL	PARAMETER	VALUE	UNIT
V_{CBO}	Collector to base voltage	850	V
V_{CEO}	Collector to emitter voltage	800	
V_{EBO}	Emitter to base voltage	7	
I_{CP}	Peak collector current ($PW \leq 300\mu\text{s}$, duty cycle $\leq 10\%$)	10	A
I_C	Collector current	3	
I_B	Base current	1.5	
P_C	Collector power dissipation	$T_c = 25^\circ\text{C}$ 50	W
T_j	Junction temperature	150	$^\circ\text{C}$
T_{stg}	Storage temperature	-55 to 150	

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

ELECTRICAL CHARACTERISTICS (T _a = 25°C)						
SYMBOL	PARAMETER	CONDITIONS	VALUE			UNIT
			MIN.	TYP.	MAX.	
V _{(BR)CBO}	Collector to base breakdown voltage	I _C = 1mA, I _E = 0	850			V
V _{(BR)CEO}	Collector to emitter breakdown voltage	I _C = 5mA, I _B = 0	800			
V _{(BR)EBO}	Emitter to base breakdown voltage	I _E = 1mA, I _C = 0	7			
I _{CBO}	Collector cutoff current	V _{CB} = 800V, I _E = 0			10	μA
I _{EBO}	Emitter cutoff current	V _{EB} = 5V, I _C = 0			10	
V _{CEX(SUS)}	Collector to emitter sustaining voltage	I _C = 1.5A, L = 2mH, I _{B1} = 0.3A, I _{B2} = -0.3A, clamped	800			V
V _{CE(sat)}	Collector to emitter saturation voltage	I _C = 1.5A, I _B = 0.3A			2	V
V _{BE(sat)}	Base to emitter saturation voltage	I _C = 1.5A, I _B = 0.3A			1.5	
f _T	Transition frequency (Gain-Bandwidth product)	V _{CE} = 10V, I _C = 0.2A		15		MHz
C _{ob}	Output capacitance	V _{CB} = 10V, f = 1MHz, I _E = 0		60		pF
t _{on}	Turn-on time	I _C = 2A, I _{B1} = 0.4A, I _{B2} = -0.8A V _{CC} = 400V, R _L = 200Ω			0.5	μs
t _{stg}	Storage time				3.0	
t _f	Fall time				0.3	
h _{FE1}	DC current gain	V _{CE} = 5V, I _C = 0.2A	Rank-N	10		20
			Rank-R	15		30
			Rank-O	20		40
h _{FE2}		V _{CE} = 5V, I _C = 1A	10			

ORDERING INFORMATION SCHEME	
<p>2SC 5027 A - R</p>	
<p>Transistor series NPN Type</p>	2SC
<p>Current & Voltage rating, I_C & V_{CEO} 3A / 800V</p>	5027
<p>Package type A = TO-220AB AF = TO-220F</p>	A
<p>DC current gain rank, h_{FE1} N = 10 ~ 20 R = 15 ~ 30 O = 20 ~ 40</p>	R

Fig.1 $I_C - V_{CE}$ characteristics

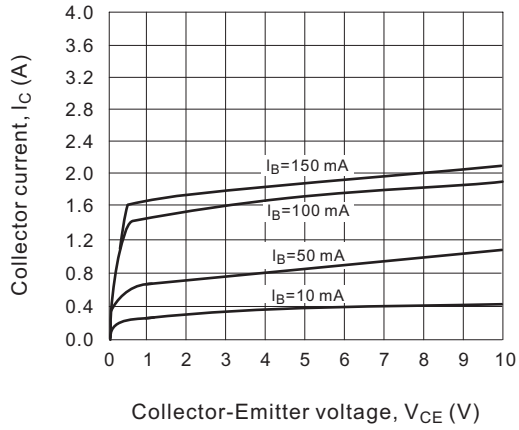


Fig.2 $I_C - V_{BE}$ characteristics

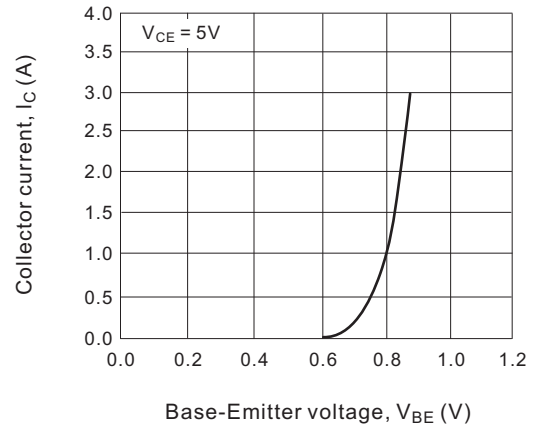


Fig.3 $h_{FE} - I_C$ characteristics

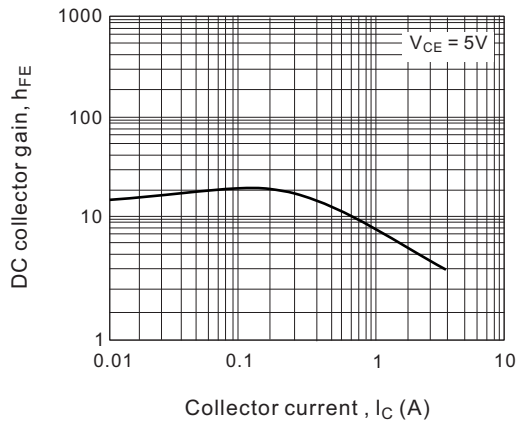


Fig.4 Switching time - V_{CE} characteristics

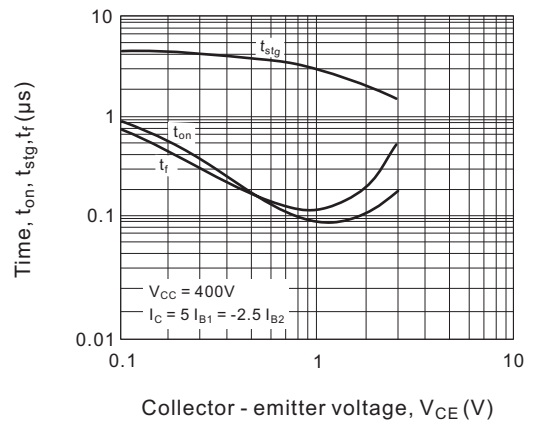


Fig.5 $V_{BE(sat)} / V_{CE(sat)} - I_C$ characteristics

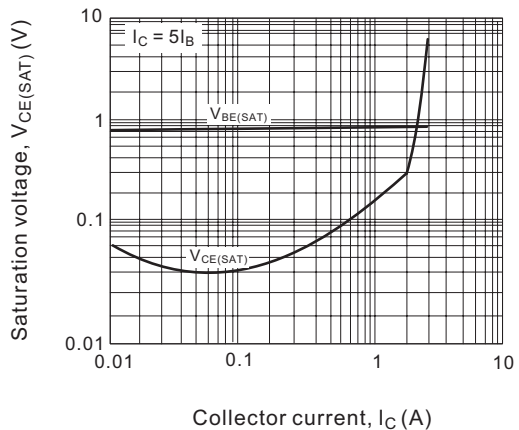


Fig.6 Safe operating area (SOA)

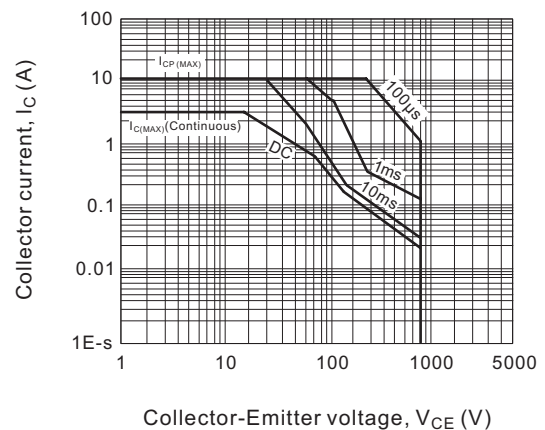


Fig.7 P_C - T_C derating

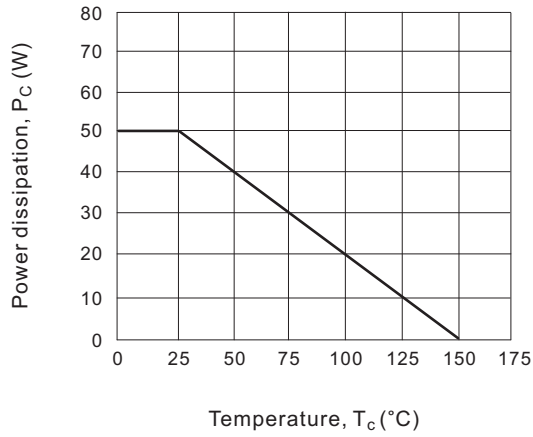
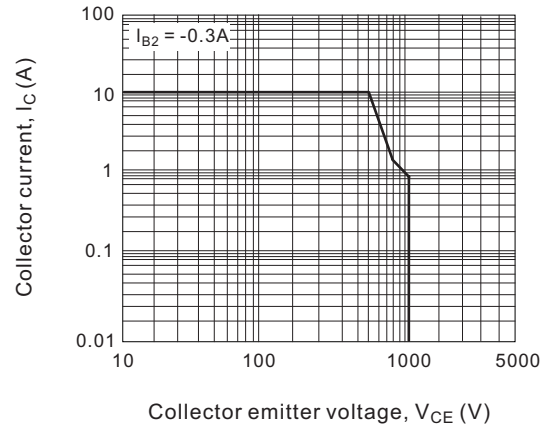
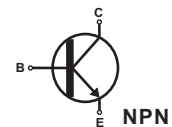
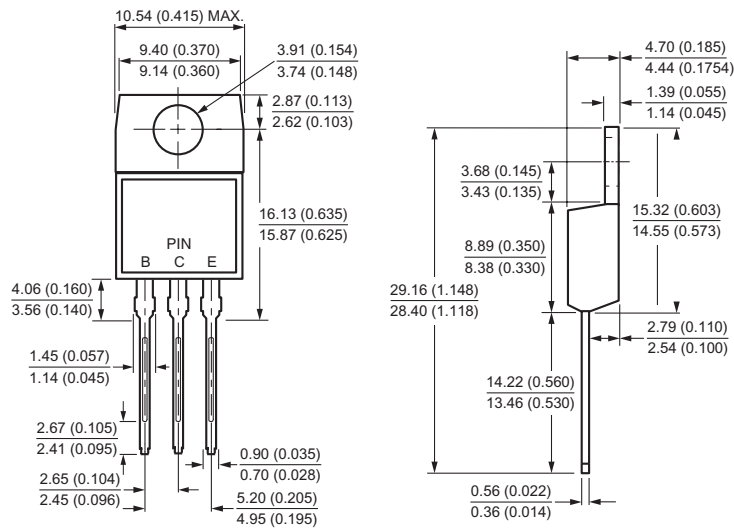


Fig.8 Reverse bias SOA



Case Style

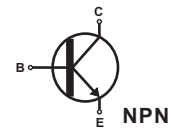
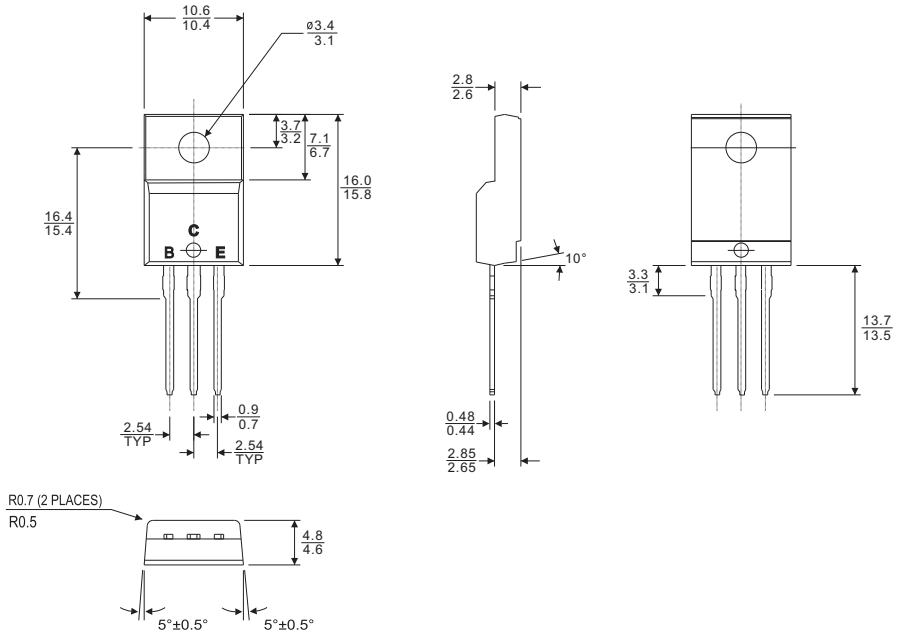
TO-220AB



All dimensions in millimeters

Case Style

ITO-220AB



All dimensions in millimeters