

High Voltage Fast-Switching NPN Power Transistor

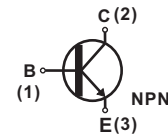
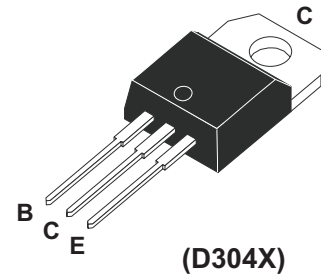
12A/400V/100W

FEATURES

- High-speed switching
- High breakdown voltage
- High current capability
- High reliability

APPLICATIONS

- Electronic ballasts, energy-saving light
- High frequency power transformer
- High frequency switching power supply
- Common power amplifier



ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$)				
SYMBOL	PARAMETER		VALUE	UNIT
V_{CBO}	Collector to base voltage ($I_E=0$)		450	V
V_{CEO}	Collector to emitter voltage ($I_B=0$)		400	
V_{CES}	Collector to emitter voltage ($V_{BE}=0$)		450	
V_{EBO}	Emitter to base voltage		9	
I_C	Collector current		12	A
I_{CM}^*	Peak Collector current		24	
I_B	Base current		6	
I_{BM}^*	Peak Base current		12	
P_C	Collector power dissipation	$T_C = 25^\circ\text{C}$	100	W
T_j	Junction temperature		150	$^\circ\text{C}$
T_{stg}	Storage temperature		-55 to 150	

*Pulse test: pulse width = 5.0ms, duty cycle < 10%

THERMAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$)			
SYMBOL	PARAMETER	VALUE	UNIT
$R_{th(j-c)}$	Thermal resistance, junction to case	1.25	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS (T _C = 25°C)					
SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
I _{CBO}	Collector cutoff current	V _{CBO} = 450V, I _E = 0		100	μA
I _{CEO}		V _{CEO} = 400V, I _B = 0		50	
I _{EBO}	Emitter cutoff current	V _{EBO} = 9V, I _C = 0		1.0	
V _{(BR)CEO}	Collector to emitter breakdown voltage	I _C = 10mA, I _B = 0	400		V
V _{CEO(SUS)} *	Collector to emitter sustaining voltage	I _C = 1A, L = 50mH			
V _{(BR)CBO}	Collector to base breakdown voltage	I _C = 1mA, I _E = 0	450		
V _{(BR)EBO}	Emitter to base breakdown voltage	I _E = 1mA, I _C = 0	9		
h _{FE}	Forward current transfer ratio (DC current gain)	V _{CE} = 5V, I _C = 5A	8	40	
		V _{CE} = 5V, I _C = 8A	5		
V _{CE(sat)}	Collector to emitter saturation voltage	I _C = 5A, I _B = 1A		0.8	V
		I _C = 8A, I _B = 1.6A		2.2	
V _{BE(sat)}	Base to emitter saturation voltage	I _C = 5A, I _B = 1A		1.6	
t _{on}	Turn-on time	V _{CC} = 24V, I _C = 5A I _{B1} = -I _{B2} = 1A		0.7	μS
t _{stg}	Storage time			3.0	
t _f	Fall time			0.7	
f _T	Transistion frequency	V _{CE} = 10V, I _C = 0.5A f = 1.0MHz	2.5		MHz

*V_{CEO(sus)} Test circuit

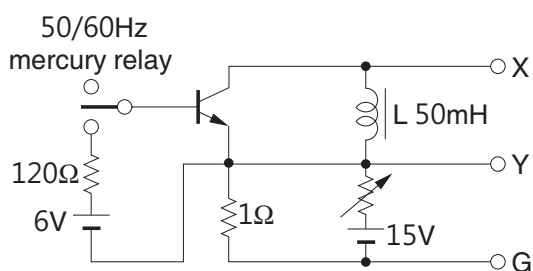


Fig.1 DC Current gain

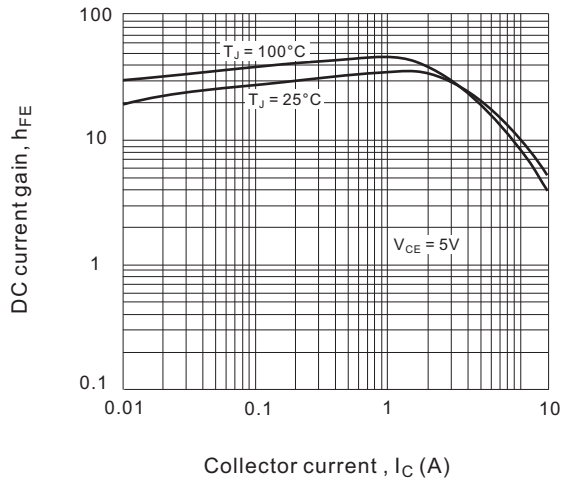


Fig.2 Base - Emitter saturation voltage

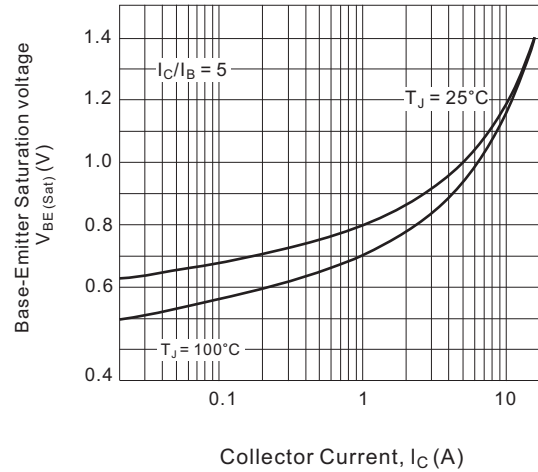


Fig.3 Collector-Emitter saturation voltage

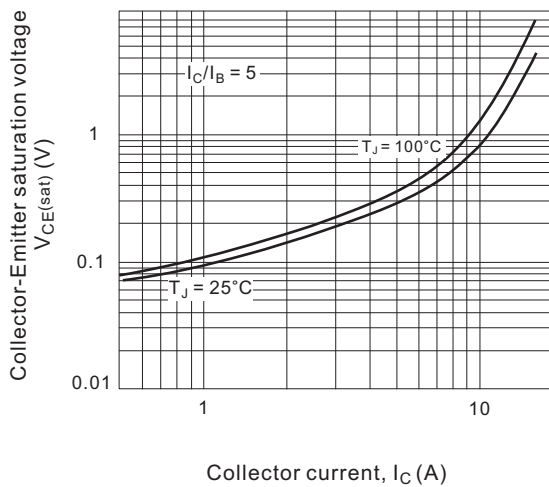


Fig.4 Power derating

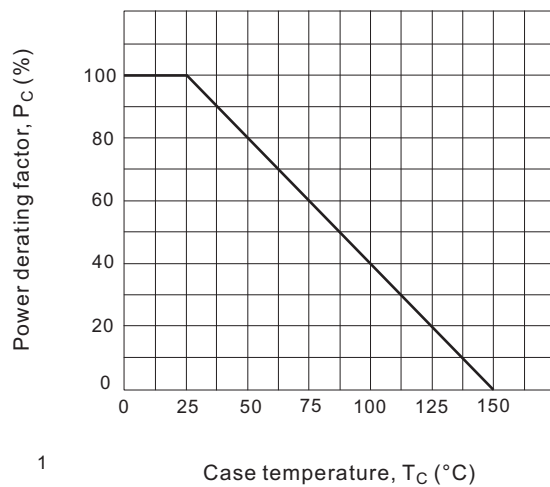
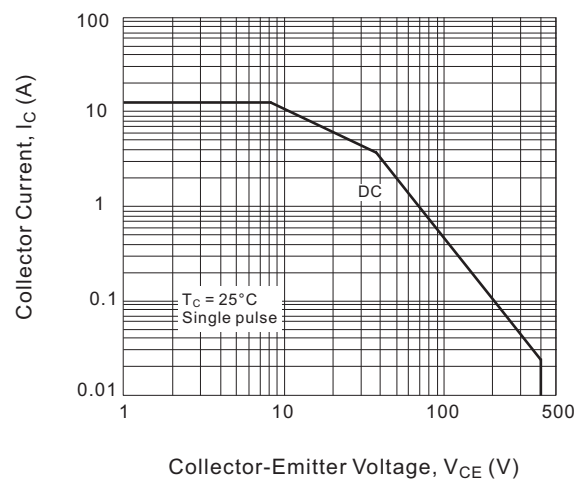


Fig.5 Safe operating area (SOA)



Case Style

TO-220AB

