

High Voltage Fast-Switching NPN Power Transistor

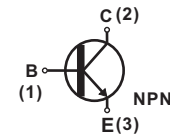
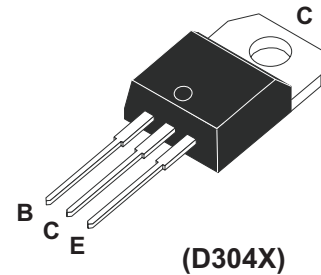
12A/400V/100W

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		UNIT
$R_{th(j-c)}$	Thermal resistance, junction to case		$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$)					
SYMBOL	PARAMETER	CONDITIONS	MIN	MAX	UNIT
I_{CBO}	Collector cutoff current	$V_{CBO} = 450\text{V}, I_E = 0$		100	μA
I_{CEO}		$V_{CEO} = 400\text{V}, I_B = 0$		50	
I_{EBO}	Emitter cutoff current	$V_{EBO} = 9\text{V}, I_C = 0$		1.0	
$V_{(BR)CEO}$	Collector to emitter breakdown voltage	$I_C = 10\text{mA}, I_B = 0$	400		V
$V_{CEO(SUS)}^*$	Collector to emitter sustaining voltage	$I_C = 1\text{A}, L = 50\text{mH}$			
$V_{(BR)CBO}$	Collector to base breakdown voltage	$I_C = 1\text{mA}, I_E = 0$	450		
$V_{(BR)EBO}$	Emitter to base breakdown voltage	$I_E = 1\text{mA}, I_C = 0$	9		
h_{FE}	Forward current transfer ratio (DC current gain)	$V_{CE} = 5\text{V}, I_C = 5\text{A}$	8	40	
		$V_{CE} = 5\text{V}, I_C = 8\text{A}$	5		
$V_{CE(sat)}$	Collector to emitter saturation voltage	$I_C = 5\text{A}, I_B = 1\text{A}$		0.8	V
		$I_C = 8\text{A}, I_B = 1.6\text{A}$		2.2	
$V_{BE(sat)}$	Base to emitter saturation voltage	$I_C = 5\text{A}, I_B = 1\text{A}$		1.6	
t_{on}	Turn-on time	$V_{CC} = 24\text{V}, I_C = 5\text{A}$ $I_{B1} = -I_{B2} = 1\text{A}$		0.7	μS
t_{stg}	Storage time			3.0	
t_f	Fall time			0.7	
f_T	Transistion frequency	$V_{CE} = 10\text{V}, I_C = 0.5\text{A}$ $f = 1.0\text{MHz}$	2.5		MHz

* $V_{CEO(sus)}$ Test circuit

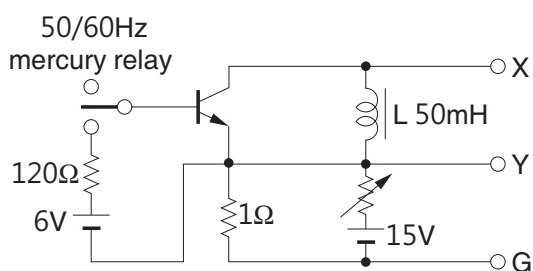


Fig.1 DC Current gain

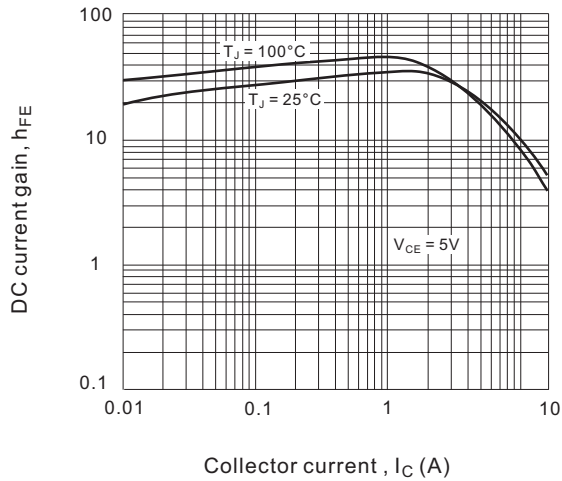


Fig.2 Base - Emitter saturation voltage

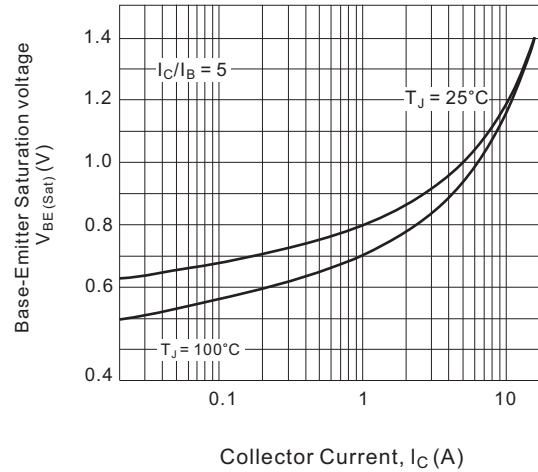


Fig.3 Collector-Emitter saturation voltage

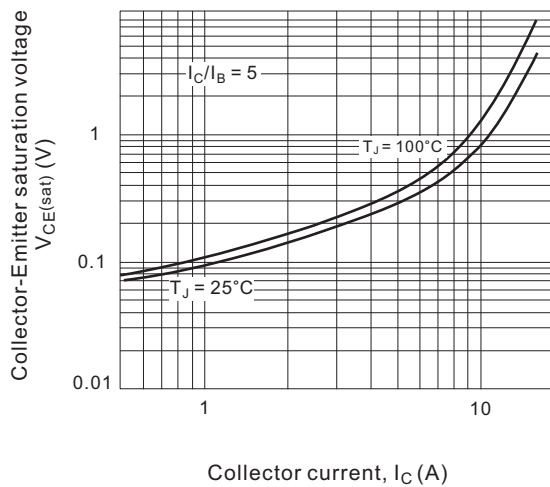


Fig.4 Power derating

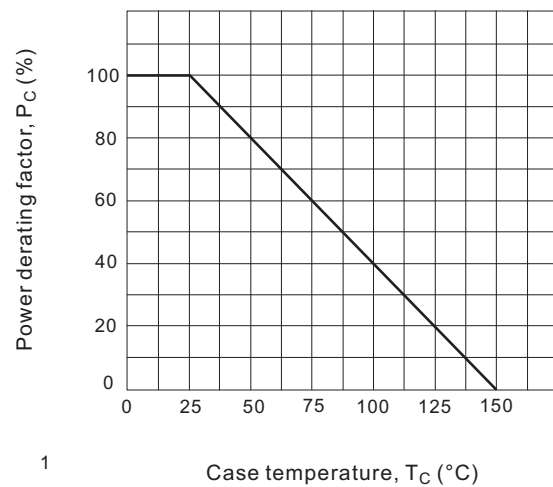
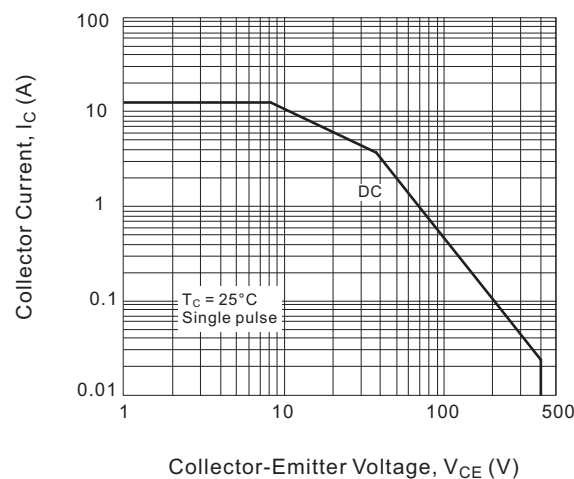


Fig.5 Safe operating area (SOA)



Case Style

TO-220AB

