

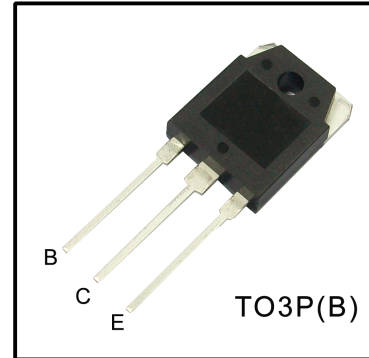
High Voltage Fast-Switching NPN Power Transistor

Features

- Very High Switching Speed
- High Voltage Capability
- Wide Reverse Bias SOA

General Description

This Device is designed for high voltage, High speed switching characteristics required such as lighting system, switching mode power supply.



Absolute Maximum Ratings

Symbol	Parameter	Test Conditions	Value	Units
V _{CES}	Collector-Emitter Voltage	V _{BE} =0	700	V
V _{CEO}	Collector -emitter Voltage	I _B =0	400	V
V _{EBO}	Emitter-Base Voltage	I _C =0	9.0	V
I _C	Collector Current		12	A
I _{CP}	Collector pulse Current		25	A
I _B	Base Current		6.0	A
I _{BM}	Base Peak Current	t _P =5ms	12	A
P _C	Total Dissipation at T _c =25°C		120	W
T _J	Operation Junction Temperature		-40~150	°C
T _{STG}	Storage Temperature		-40~150	°C

Thermal Characteristics

Symbol	Parameter	Value	Units
R _{θJC}	Thermal Resistance Junction to Case	1.04	°C/W
R _{θJA}	Thermal Resistance Junction to Ambient	62.5	°C/W

Electrical Characteristics($T_c=25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Conditions	Value			Units
			Min	Typ	Max	
$V_{CEO(sus)}$	Collector –Emitter Breakdown Voltage	$I_c=10\text{mA}, I_b=0$	400	–	–	V
$V_{CE(sat)}$	Collector –Emitter Saturation Voltage	$I_c=5.0\text{A}, I_b=1.0\text{A}$			1.0	V
		$I_c=8.0\text{A}, I_b=1.6\text{A}$	–	–	1.5	
$V_{CE(sat)}$	Collector –Emitter Saturation Voltage	$I_c=12\text{A}, I_b=3.0\text{A}$			3.0	V
		$I_c=8.0\text{A}, I_b=1.6\text{A}$ $T_c=100^\circ\text{C}$	–	–	2.0	
$V_{BE(sat)}$	Base–Emitter Saturation Voltage	$I_c=5.0\text{A}, I_b=1.0\text{A}$	–	–	1.2	V
		$I_c=8.0\text{A}, I_b=1.6\text{A}$	–	–	1.6	
$V_{BE(sat)}$	Base–Emitter Saturation Voltage	$I_c=8.0\text{A}, I_b=1.6\text{A}$ $T_c=100^\circ\text{C}$	–	–	1.5	V
I_{EBO}	Emitter–Base Cutoff Current	$V_{eb}=9\text{V}, I_c=0\text{V}$	–	–	10	μA
hFE	DC Current Gain	$V_{ce}=5\text{V}, I_c=5.0\text{A}$	10	–	40	
		$V_{ce}=5\text{V}, I_c=8.0\text{A}$	6	–	30	
t_s	Storage Time	$V_{cc}=5.0\text{V}, I_c=0.5\text{A}$	4	–	10	μs
t_f	Fall Time	(UI9600)		–	0.8	
f_T	Current Gain Bandwidth Product	$V_{ce}=10\text{V}, I_c=0.5\text{A}$	4			MHz

Note :

Pulse Test : Pulse width 300,Duty cycle 2%

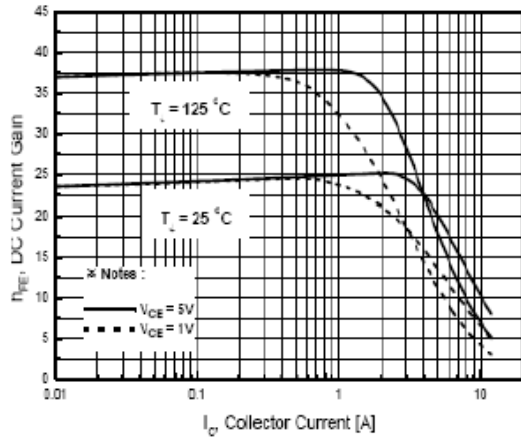


Fig.1 DC Current Gain

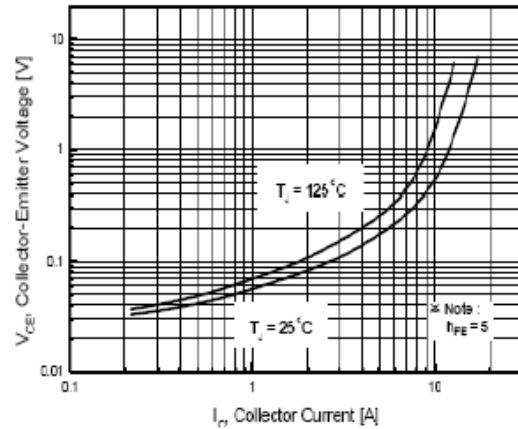


Fig.2 Collector-Emitter Saturation Voltage

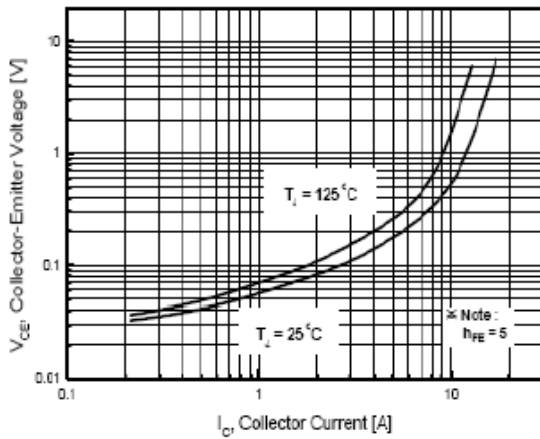


Fig.3 Base-Emitter Saturation Voltage

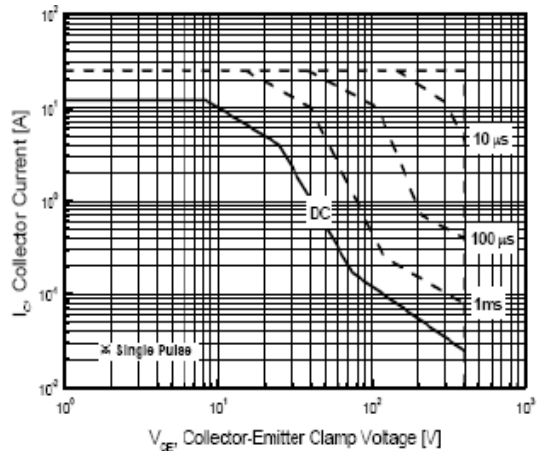


Fig.4 Safe Operation Area

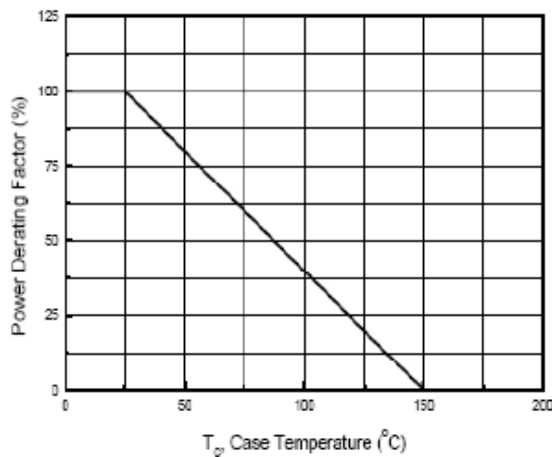


Fig.5 Power Derating

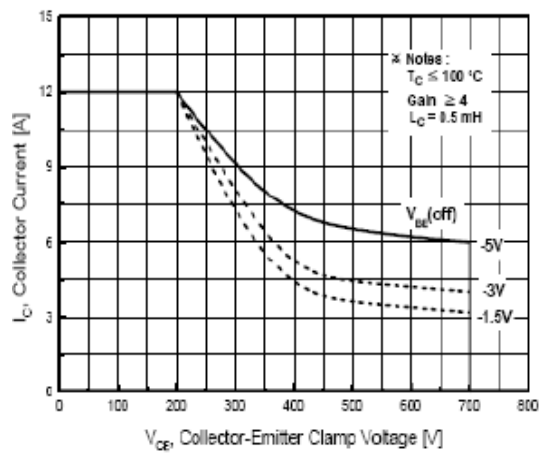
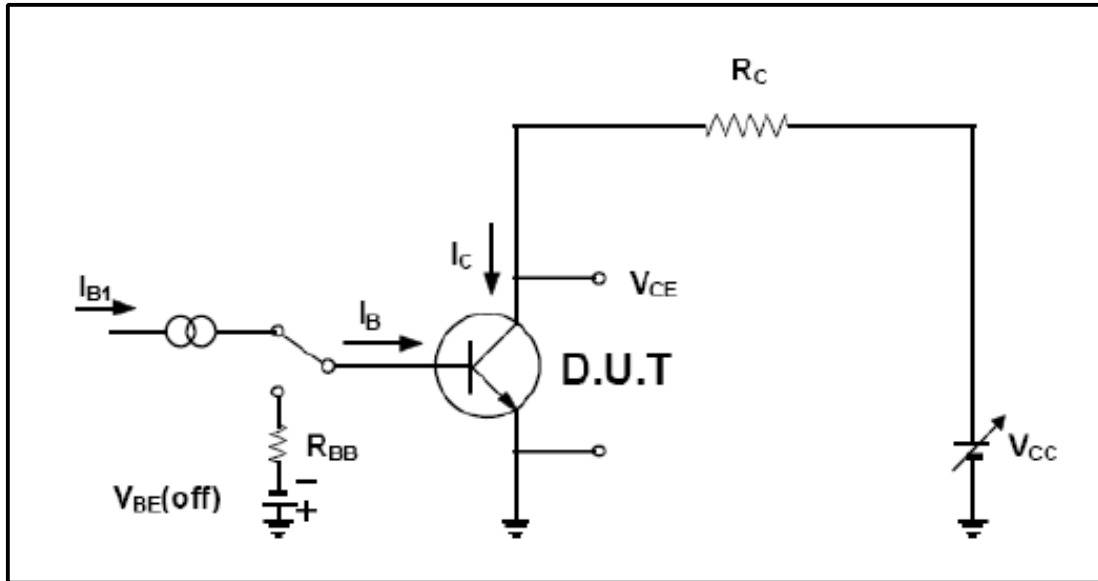
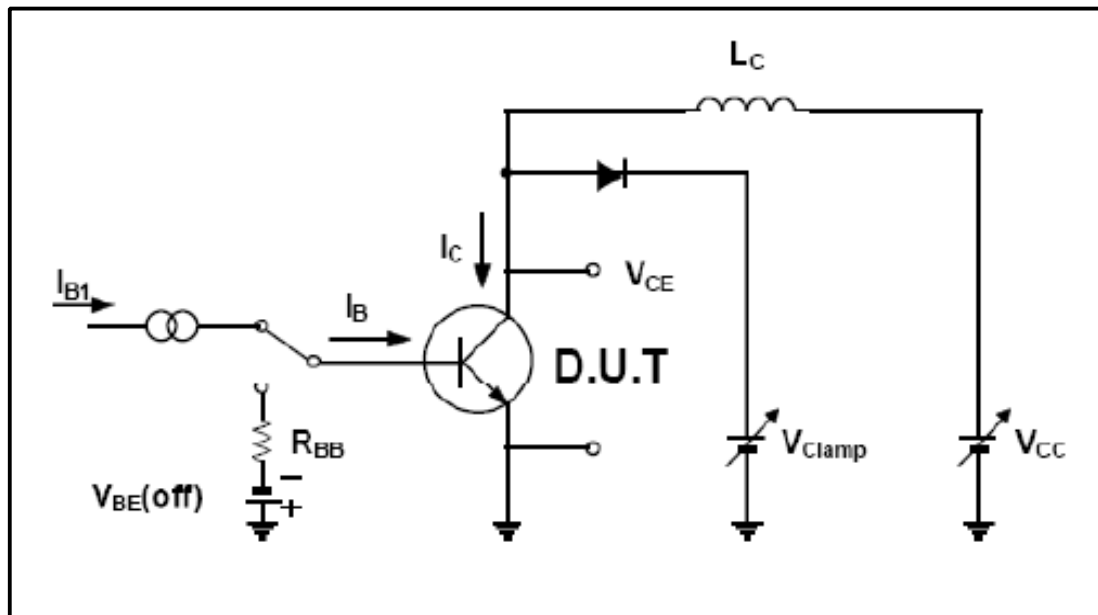


Fig.6 Reverse Biased Safe Operation Area



Resistive Load Switching Test Circuit



Inductive Load Switching & RBSOA Test Circuit

To3P(B) Package Dimension

