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		1.5	A
I_{CP}	Collector pulse Current		3.0	A
I_B	Base Current		0.75	A
I_{BM}	Base Peak Current	t_P=5ms	1.5	A
P_C	Total Dissipation at Tc*=25℃		18	W
	Total Dissipation at Ta*=25℃		1.14	
T_J	Operation Junction Temperature		-40~150	℃
T_{STG}	Storage Temperature		-40~150	℃

Tc :Case temperature(good cooling)

Ta :Ambient temperature(without heat sink)

Thermal Characteristics

Symbol	Parameter	Value	Units
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	13.6	℃/W

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Electrical Characteristics(Tc=25℃ unless otherwise noted)

Symbol	Parameter	Test Conditions	Value			Units
			Min	Typ	Max	
$V_{CEO(sus)}$	Collector-Emitter Breakdown Voltage	Ic=10mA,Ib=0	400	–	–	V
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	Ic=0.5A,Ib=0.1A Ic=1.0A,Ib=0.25A Ic=1.5A,Ib=0.5A	–	–	0.5 1.0 3.0	V
$V_{BE(sat)}$	Base -Emitter Saturation Voltage	Ic=0.5A,Ib=0.1A Ic=1.0A,Ib=0.25A	–	–	1.0 1.2	V
I_{CBO}	Collector-Base Cutoff Current (Vbe=-1.5V)	Vcb=700V Vcb=700V,Tc=100℃	–	–	1.0 5.0	mA
hFE	DC Current Gain	Vce=2V,Ic=1A Vce=2V,Ic=1.0A	8 3	– –	20	
ton ts tf	Resistive Load Turn-on Time Storage Time Fall Time	V_{CC}=125V,Ic=1A I_{B1}=0.2A,I_{B2}=-0.5A Tp=25μs	–	0.25 1.32 0.23	1.0 3.0 0.4	μs
ts tf	Inductive Load Storage Time Fall Time	V_{CC}=15V,Ic=1A I_{B1}=0.2A,I_{B2}=-0.5A L=0.35mH,Vclamp=300V	– –	1.2 0.12	4.0 0.3	μs
ts tf	Inductive Load Storage Time Fall Time	V_{CC}=15V,Ic=1A I_{B1}=0.2A,I_{B2}=-0.5A L=0.35mH,Vclamp=300V Tc=100℃	– –	1.8 0.16	5.0 0.4	μs

Note:

Pulse Test : Pulse width 300,Duty cycle 2%

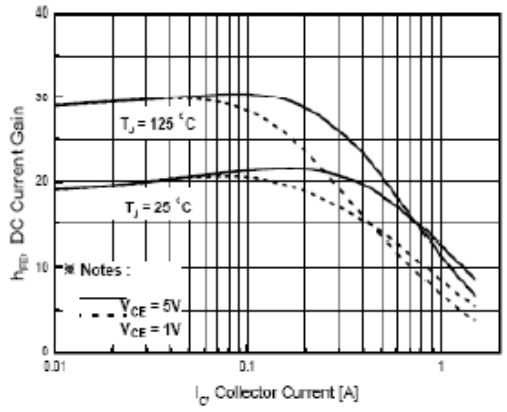


Fig.1 DC Current Gain

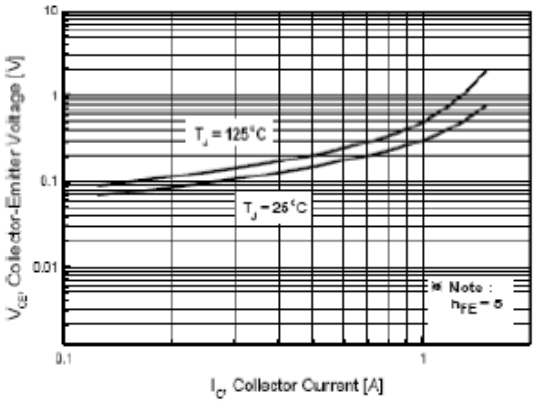


Fig.2 Base -Emitter Saturation Voltage

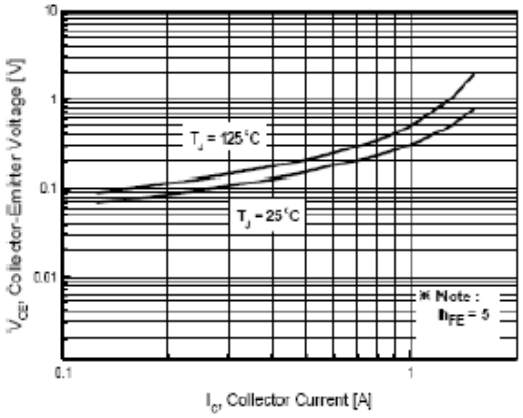


Fig.3 Collector -Emitter saturation Voltage

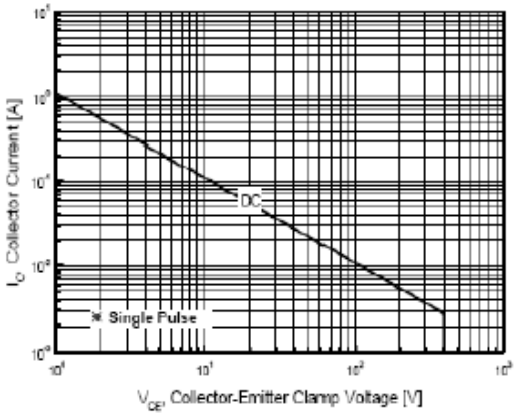


Fig.4 Safe Operation Area

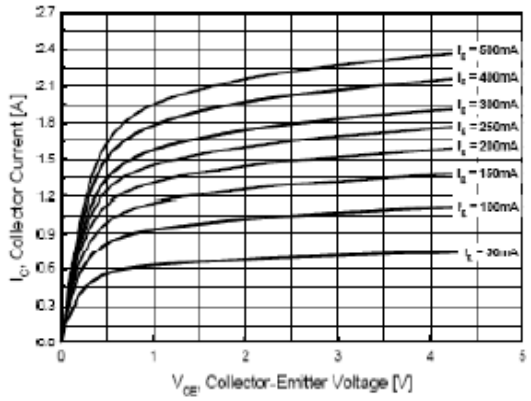


Fig.5 Static Characteristics

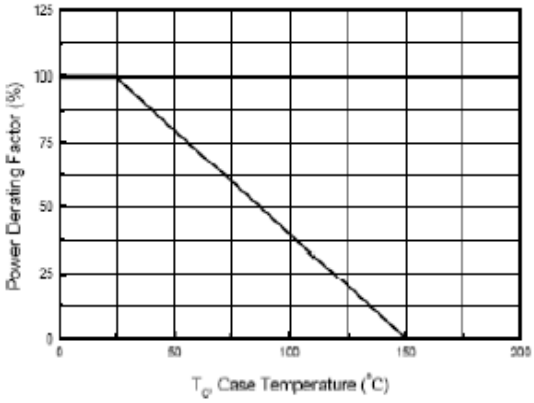
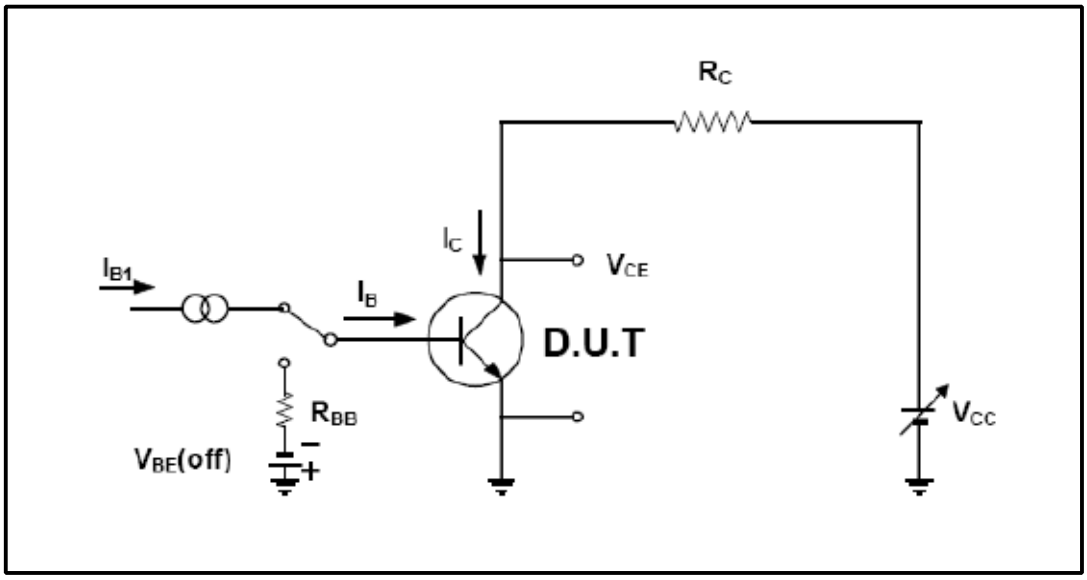
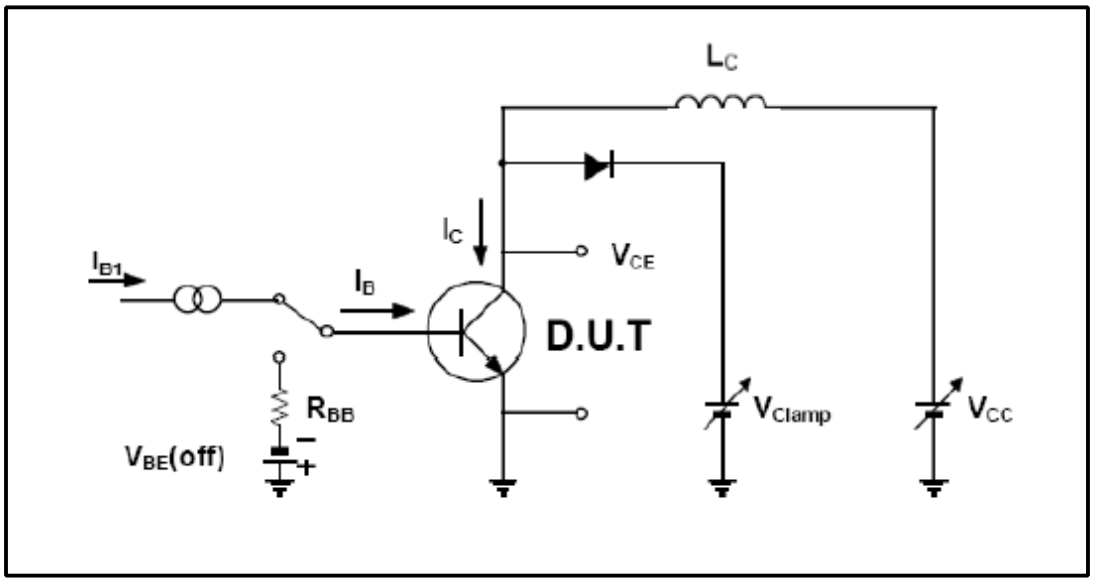


Fig.6 Power Derating



Resistive Load Switching Test Circuit



Inductive Load Switching& RBSOA Test Circuit

To-92 Package Dimension

Unit :mm

