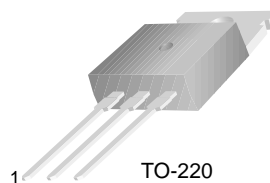


High Voltage Power Switch Switching Application

- High Speed Switching
- Wide SOA



TO-220
1.Base 2.Collector 3.Emitter

NPN Silicon Transistor

Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	1000	V
V_{CEO}	Collector-Emitter Voltage	450	V
V_{EBO}	Emitter-Base Voltage	9	V
I_C	Collector Current (DC)	5	A
I_{CP}	Collector Current (Pulse)	10	A
I_B	Base Current (DC)	2	A
I_{BP}	Base Current (Pulse)	4	A
P_C	Collector Dissipation ($T_C=25^\circ\text{C}$)	100	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	- 65 ~ 150	$^\circ\text{C}$

Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
BV_{CBO}	Collector-Base Breakdown Voltage	$I_C = 1\text{mA}, I_E = 0$	1000			V
BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C = 5\text{mA}, I_B = 0$	450			V
BV_{EBO}	Emitter-Base Breakdown Voltage	$I_C = 1\text{mA}, I_E = 0$	9			V
I_{CBO}	Collector Cut-off Current	$V_{CB} = 800\text{V}, V_{BE} = 0$			10	μA
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 9\text{V}, I_C = 0$			10	μA
h_{FE1} h_{FE2}	* DC Current Gain	$V_{CE} = 5\text{V}, I_C = 0.5\text{A}$ $V_{CE} = 1\text{V}, I_C = 2\text{A}$	15 6		30	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 1\text{A}, I_B = 0.1\text{A}$ $I_C = 2\text{A}, I_B = 0.4\text{A}$		0.55	0.8 0.5	V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 1\text{A}, I_B = 0.1\text{A}$ $I_C = 2\text{A}, I_B = 0.4\text{A}$			1.1 1.25	V V
C_{ob}	Output Capacitance	$V_{CB} = 10\text{V}, f = 1\text{MHz}$		70		pF
C_{ib}	Input Capacitance	$V_{EB} = 8\text{V}, I_C = 0, f = 1\text{MHz}$		1000		pF
f_T	Current Gain Bandwidth Product	$V_{EB} = 6\text{V}, I_C = 0.1\text{A}$		14		MHz
t_{ON}	Turn ON Time	$V_{CC} = 125\text{V}, I_C = 1\text{A}$			200	ns
t_{STG}	Storage Time	$I_{B1} = 0.2\text{A}, I_{B2} = -0.2\text{A}$ $R_L = 125\Omega$			2	μs
t_F	Fall Time				500	ns

* Pulse Test : Pulse Width=5ms, Duty Cycle≤10%

Typical Characteristics

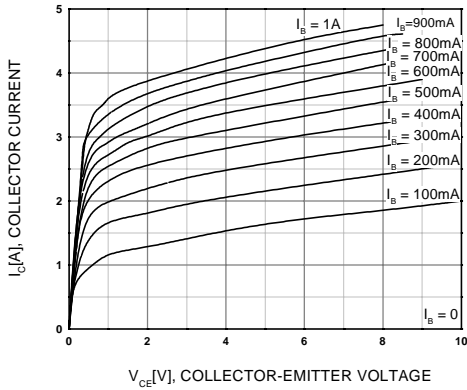


Figure 1. Static Characteristic

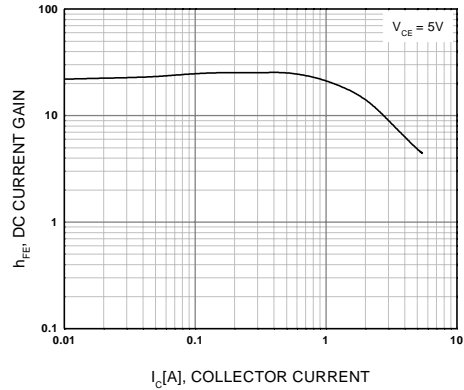


Figure 2. DC current Gain

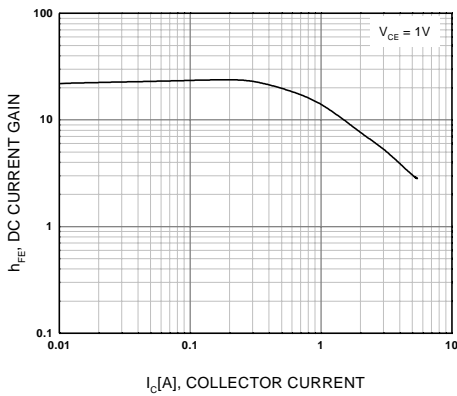


Figure 3. DC current Gain

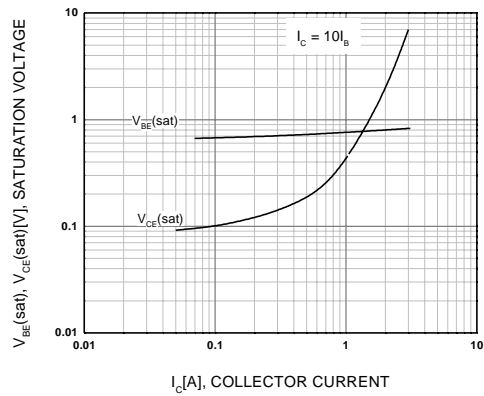


Figure 4. Base-Emitter Saturation Voltage
Collect-Emitter Saturation Voltage

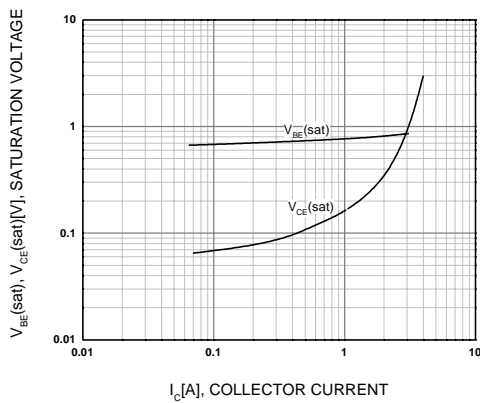


Figure 5. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

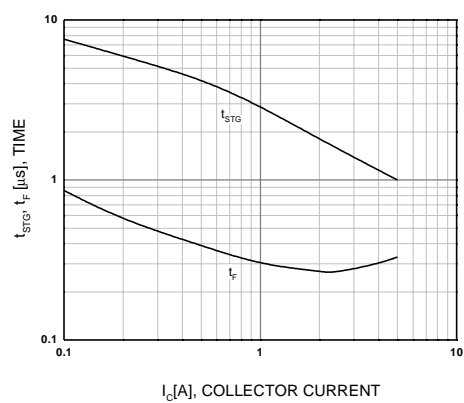


Figure 6. Switching Time

Typical Characteristics (Continued)

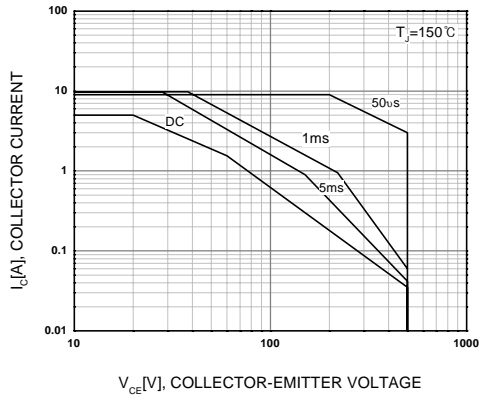


Figure 7. Safe Operating Area

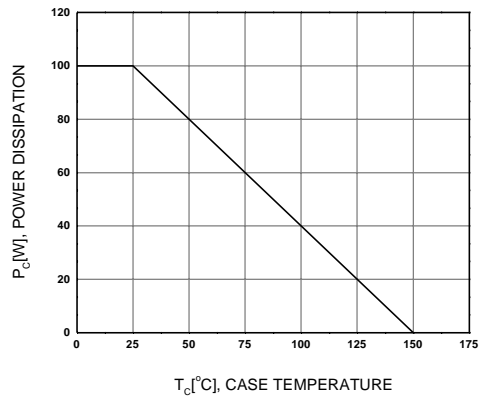
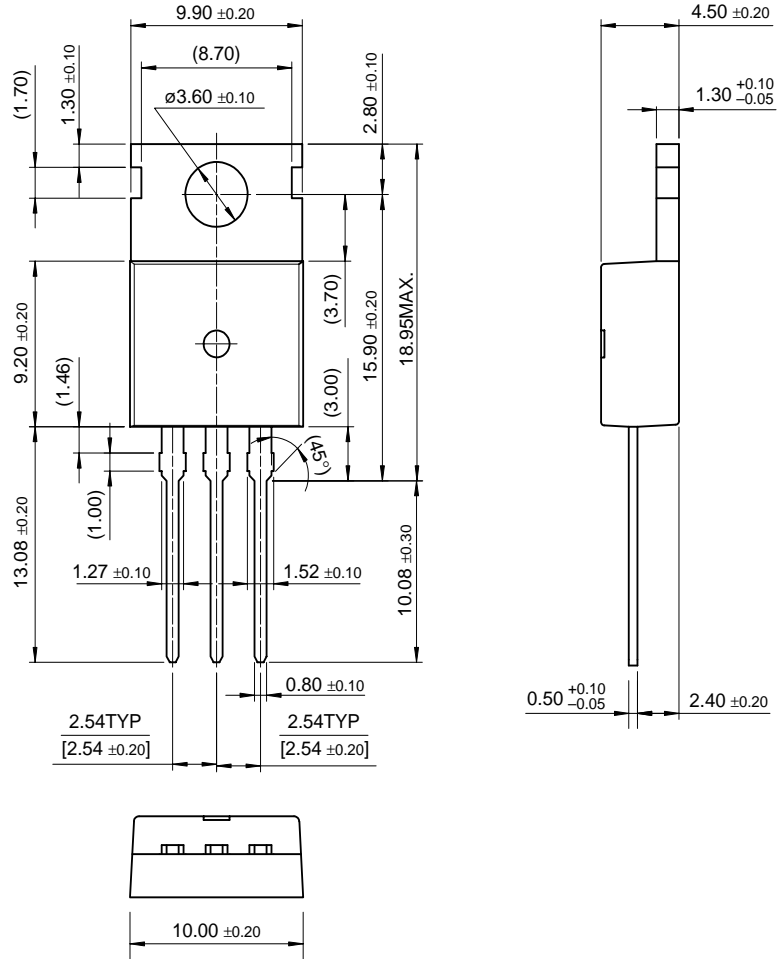


Figure 8. Power Derating

Package Dimensions

TO-220



Dimensions in Millimeters

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FAST®	Quiet Series™	
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