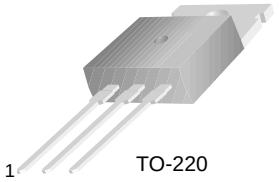
KSC2333

High Speed Switching Application

- Low Collector Saturation Voltage
- Specified of Reverse Biased SOA With Inductive Load



TO-220

1.Base 2.Collector 3.Emitter

NPN Epitaxial Silicon Transistor

Absolute Maximum Ratings T_C=25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	500	V
V_{CEO}	Collector-Emitter Voltage	400	V
V_{EBO}	Emitter-Base Voltage	7	V
I_C	Collector Current (DC)	2	A
I_{CP}	*Collector Current (Pulse)	4	A
I_B	Base Current (DC)	1	A
P_C	Collector Dissipation (T_C=25°C)	15	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	- 55 ~ 150	°C

*PW≤350µs, Duty Cycle≤10%

Electrical Characteristics TC=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
V_{CEO}(sus)	Collector-Emitter Sustaining Voltage	I_C = 0.5A, I_B =0.1A, L = 1mH	400		V
V_{CEX}(sus)1	Collector-Emitter Sustaining Voltage	I_C = 0.5A, I_{B1} = -I_{B2} = 0.1A T_C = 125°C, L = 180µH, clamped	450		V
V_{CEX}(sus)2	Collector-Emitter Sustaining Voltage	I_C = 1A, I_{B1} = 0.2A, -I_{B2} =0.2A T_C= 125°C, L = 180µH, clamped	400		V
I_{CBO}	Collector Cut-off Current	V_{CB} = 400V, I_E = 0		10	µA
I_{CER}	Collector Cut-off Current	V_{CE} = 400V, R_{BE} =51Ω, T_C = 125°C		1	mA
I_{CEX1}	Collector Cut-off Current	V_{CE} = 400V, V_{BE}(off) = -5V		10	µA
I_{CEX2}	Collector Cut-off Current	V_{CE} = 400V, V_{BE}(off) = -5V @ T_C = 125°C		1	mA
I_{EBO}	Emitter Cut-off Current	V_{EB} = 5V, I_C = 0		10	µA
h_{FE1} h_{FE2}	* DC Current Gain	V_{CE} = 5V, I_C = 0.1A V_{CE} = 5V, I_C = 0.5A	20 10	80	
V_{CE}(sat)	* Collector-Emitter Saturation Voltage	I_C = 0.5A, I_B = 0.1A		1	V
V_{BE}(sat)	* Base-Emitter Saturation Voltage	I_C = 0.5A, I_B = 0.1A		1.2	V
t_{ON}	Turn ON Time	V_{CC} = 150V, I_C = 0.5A I_{B1} = - I_{B2} = 0.1A R_L = 300Ω		1	µs
t_{STG}	Storage Time			2.5	µs
t_F	Fall Time			1	µs

* Pulse Test: PW≤350µs, Duty Cycle≤2%Pulsed

h_{FE} Classification

Classification	R	O	Y
h_{FE1}	20 ~ 40	30 ~ 60	40 ~ 80

Typical Characteristics

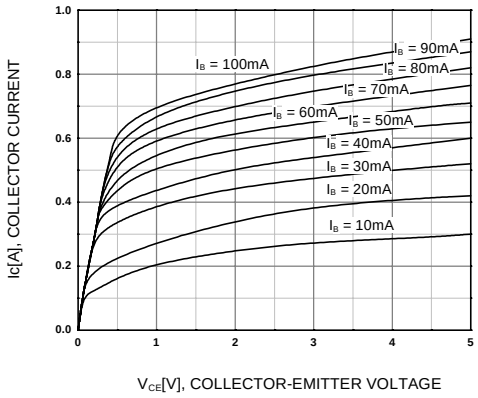


Figure 1. Static Characteristic

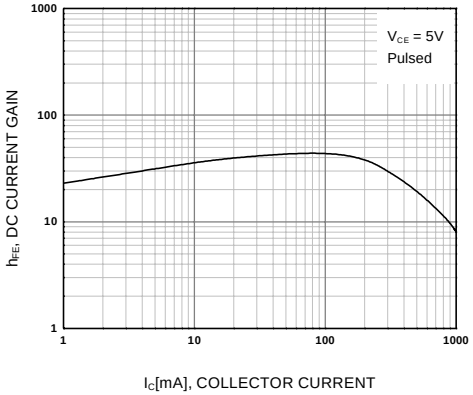


Figure 2. DC current Gain

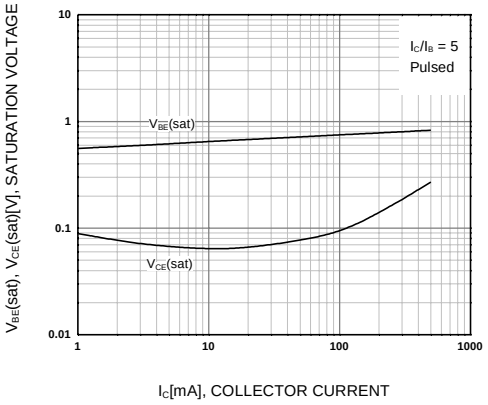


Figure 3. Collector-Emitter Saturation Voltage Base-Emitter Saturation Voltage

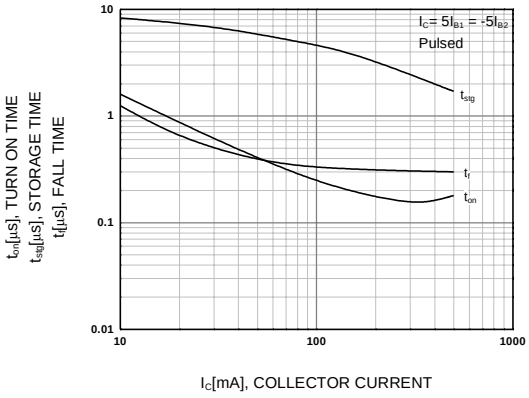


Figure 4. Turn On, Storage and Fall Time vs Collector Current

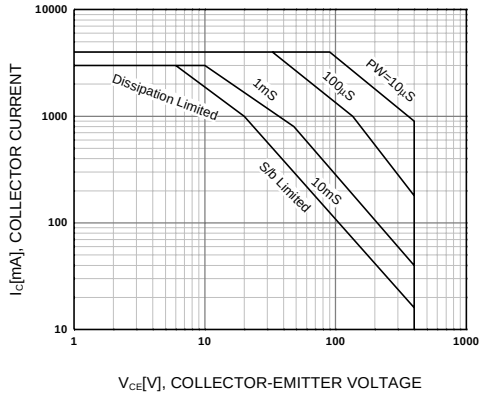


Figure 5. Forward Bias Safe Operating Area

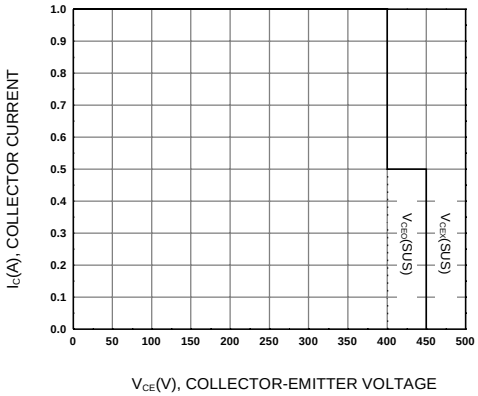


Figure 6. Reverse Bias Safe Operating Area

Typical characteristics (Continued)

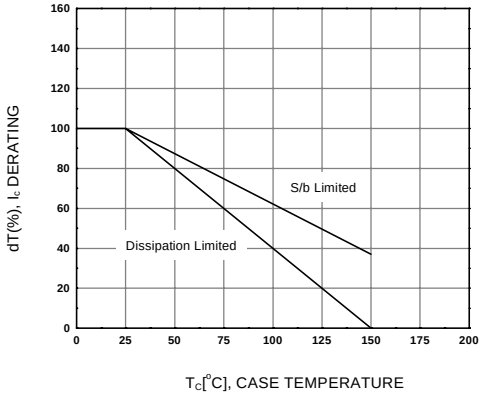


Figure 7. Derating Curve of Safe Operating Areas

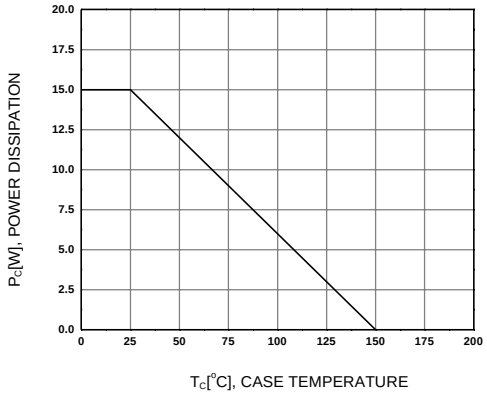
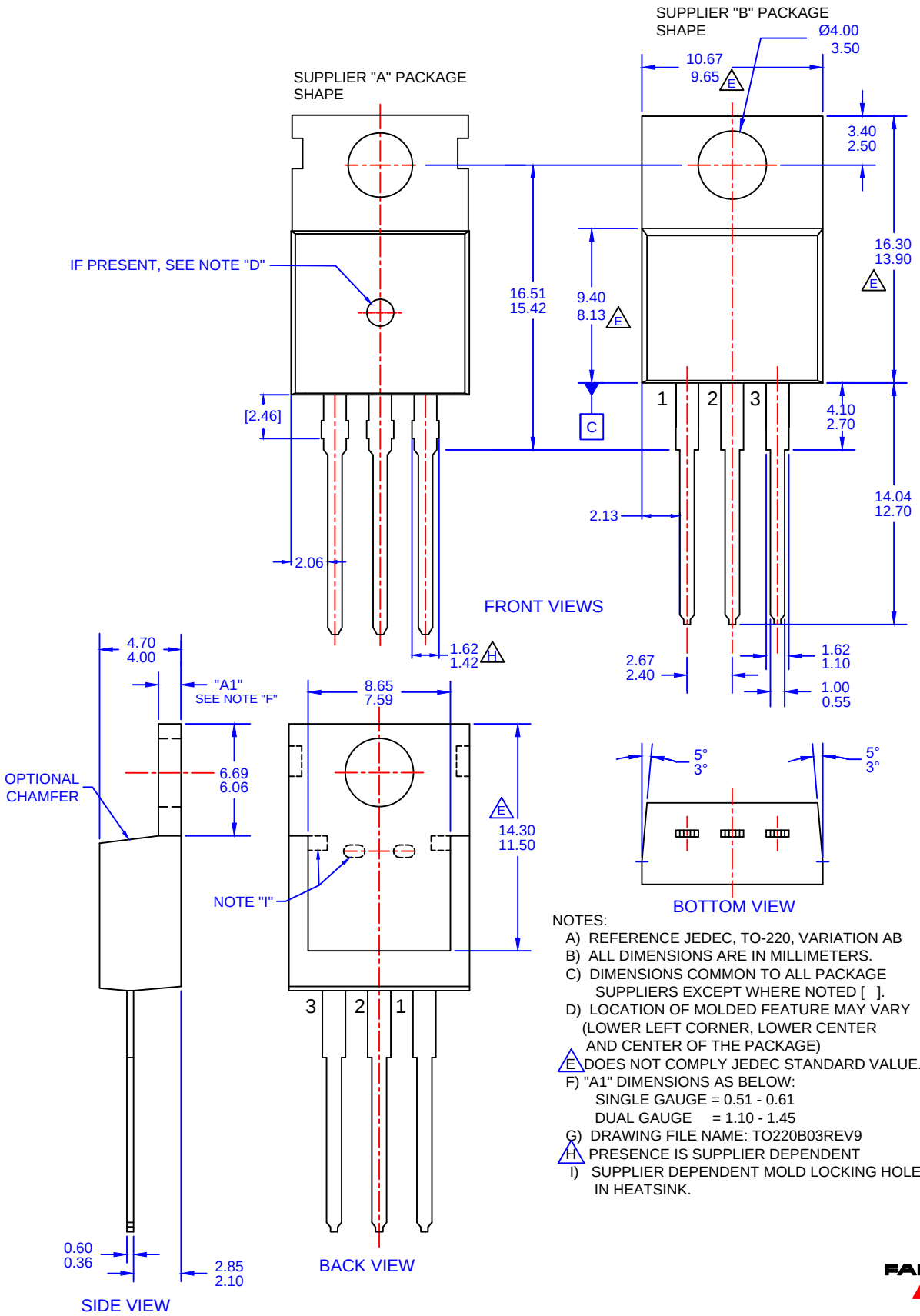


Figure 8. Power Derating



NOTES:

A) REFERENCE JEDEC, TO-220, VARIATION AB
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DIMENSIONS COMMON TO ALL PACKAGE SUPPLIERS EXCEPT WHERE NOTED [ ].
D) LOCATION OF MOLDED FEATURE MAY VARY (LOWER LEFT CORNER, LOWER CENTER AND CENTER OF THE PACKAGE)
E DOES NOT COMPLY JEDEC STANDARD VALUE.
F) "A1" DIMENSIONS AS BELOW:
SINGLE GAUGE = 0.51 - 0.61
DUAL GAUGE = 1.10 - 1.45
G) DRAWING FILE NAME: TO220B03REV9
H PRESENCE IS SUPPLIER DEPENDENT
I) SUPPLIER DEPENDENT MOLD LOCKING HOLES IN HEATSINK.

FAIRCHILD

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