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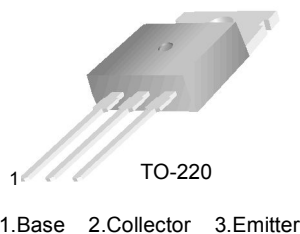


October 2008

KSC5021

NPN Silicon Transistor

- High Voltage and High Reliability
- High Speed Switching : $t_F = 0.1\mu s$ (Typ.)
- Wide SOA



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

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	800	V
V_{CEO}	Collector-Emitter Voltage	500	V
V_{EBO}	Emitter-Base Voltage	7	V
I_C	Collector Current (DC)	5	A
I_{CP}	Collector Current (Pulse)	10	A
I_B	Base Current	2	A
P_C	Collector Dissipation ($T_C=25^\circ C$)	50	W
T_J	Junction Temperature	150	$^\circ C$
T_{STG}	Storage Temperature	- 55 ~ 150	$^\circ C$

Electrical Characteristics T_C = 25°C unless otherwise noted

Symbol	Parameter	Conditions	Min.	Typ.	Max	Units
BV _{CBO}	Collector-Base Breakdown Voltage	I _C = 1mA, I _E = 0	800			V
BV _{CEO}	Collector-Emitter Breakdown Voltage	I _C = 5mA, I _B = 0	500			V
BV _{EBO}	Emitter-Base Breakdown Voltage	I _E = 1mA, I _C = 0	7			V
V _{CEX(sus)}	Collector-Emitter Sustaining Voltage	I _C = 2.5A, I _{B1} = -I _{B2} = 1A L = 1mH, Clamped	500			V
I _{CBO}	Collector Cut-off Current	V _{CB} = 500V, I _E = 0			10	μA
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 = 0.6A V _{CE} = 5V, I _C = 3A	15 8		50	
V _{CE(sat)}	Collector-Emitter Saturation Voltage	I _C = 3A, I _B = 0.6A			1	V
V _{BE(sat)}	Base-Emitter Saturation Voltage	I _C = 3A, I _B = 0.6A			1.5	V
C _{ob}	Output Capacitance	V _{CB} = 10V, I _E = 0, f=1MHz		80		pF
f _T	Current Gain Bandwidth Product	V _{CE} = 10V, I _C = 0.6A		18		MHz
t _{ON}	Turn On Time	V _{CC} = 200V I _C = 5I _{B1} = -2.5I _{B2} = 4A R _L = 50Ω			0.5	μs
t _{STG}	Storage Time				3	μs
t _F	Fall Time				0.3	μs

* Pulse Test: PW ≤ 300μs, Duty Cycle ≤ 2%

h_{FE} Classification

Classification	R	O	Y
h _{FE1}	15 ~ 30	20 ~ 40	30 ~ 50

Typical Performance Characteristics

Figure 1. Static Characteristic

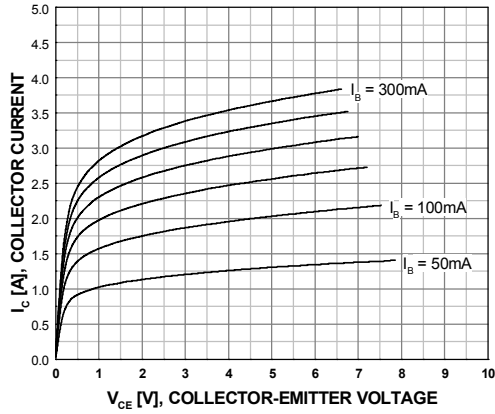


Figure 2. DC Current Gain (R-Grade)

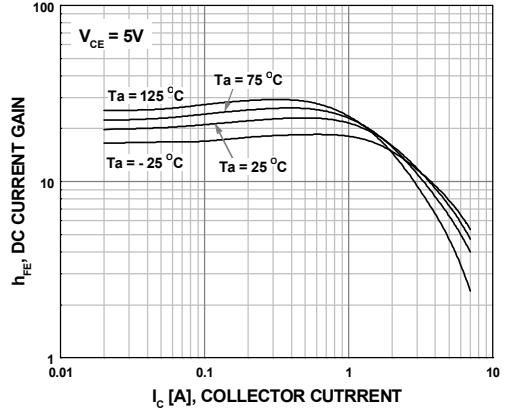


Figure 3. DC Current Gain (O-Grade)

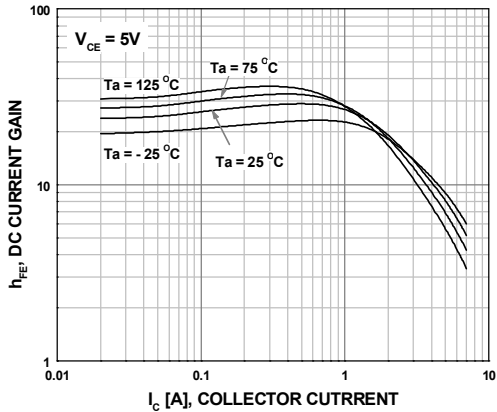


Figure 4. Saturation Voltage (R-Grade)

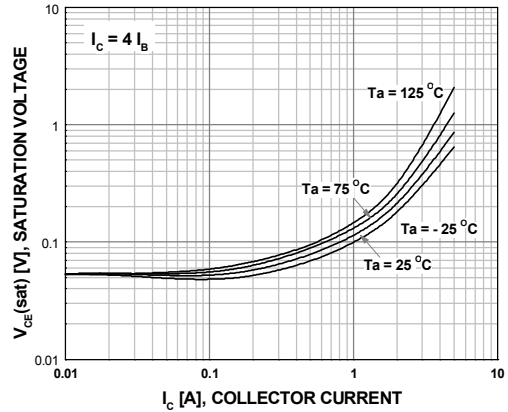


Figure 5. Saturatin Voltage (O-Grade)

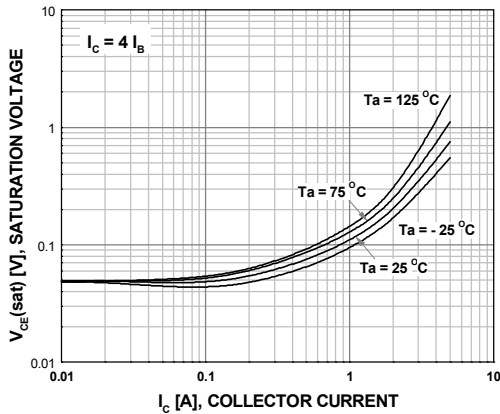
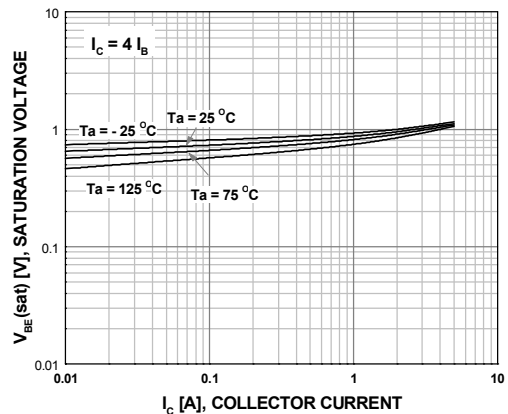


Figure 6. Saturation Voltage (R-Grade)



Typical Characteristics

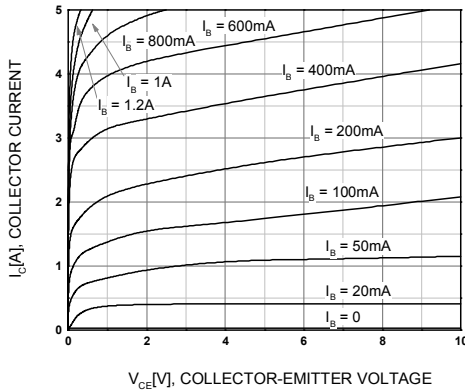


Figure 1. Static Characteristic

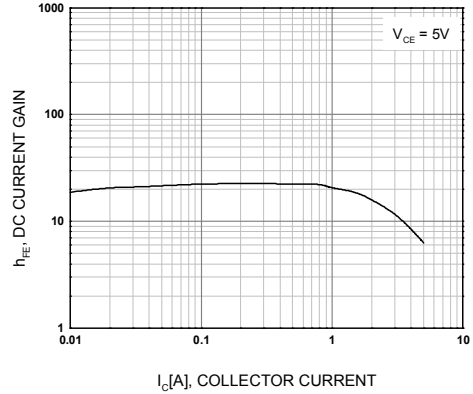


Figure 2. DC current Gain

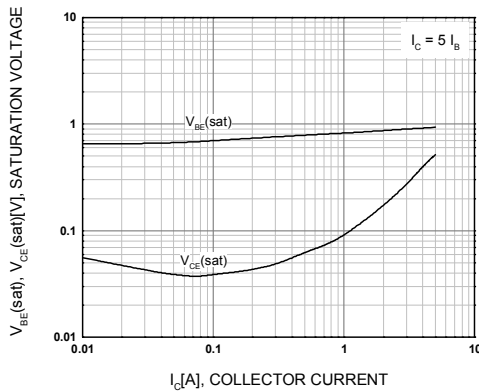


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

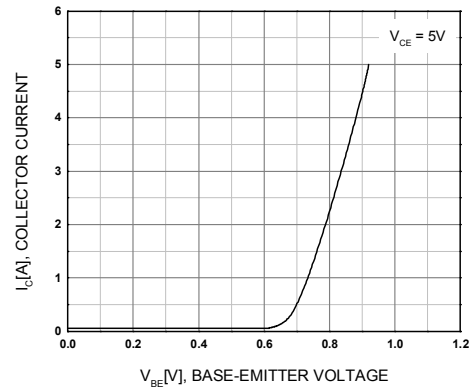


Figure 4. Base-Emitter On Voltage

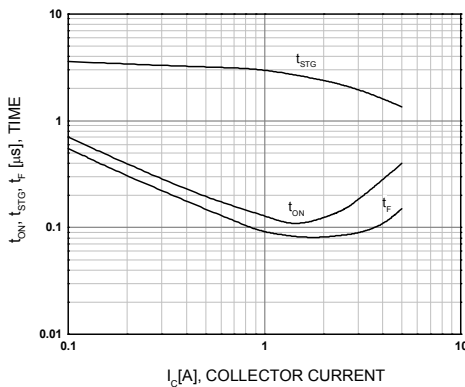


Figure 5. Switching Time

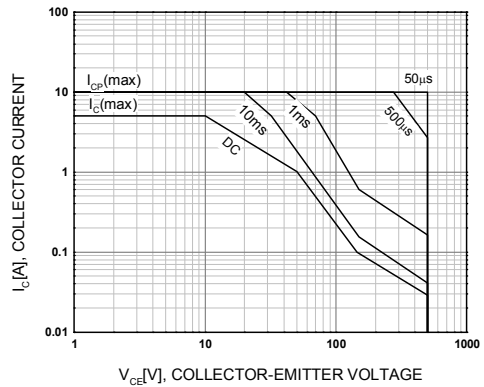


Figure 6. Safe Operating Area

Typical Characteristics (Continued)

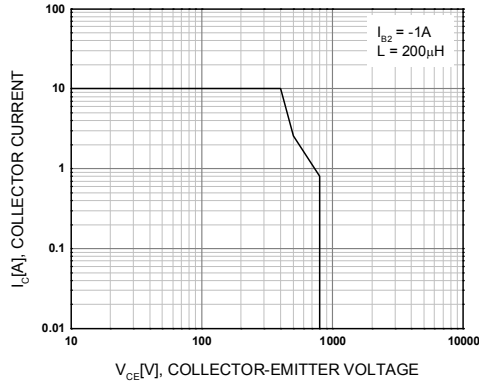


Figure 7. Reverse Bias Safe Operating Area

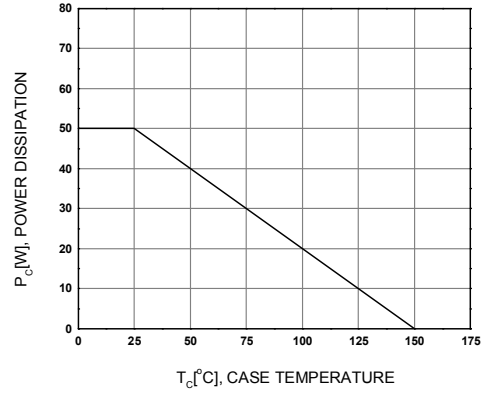
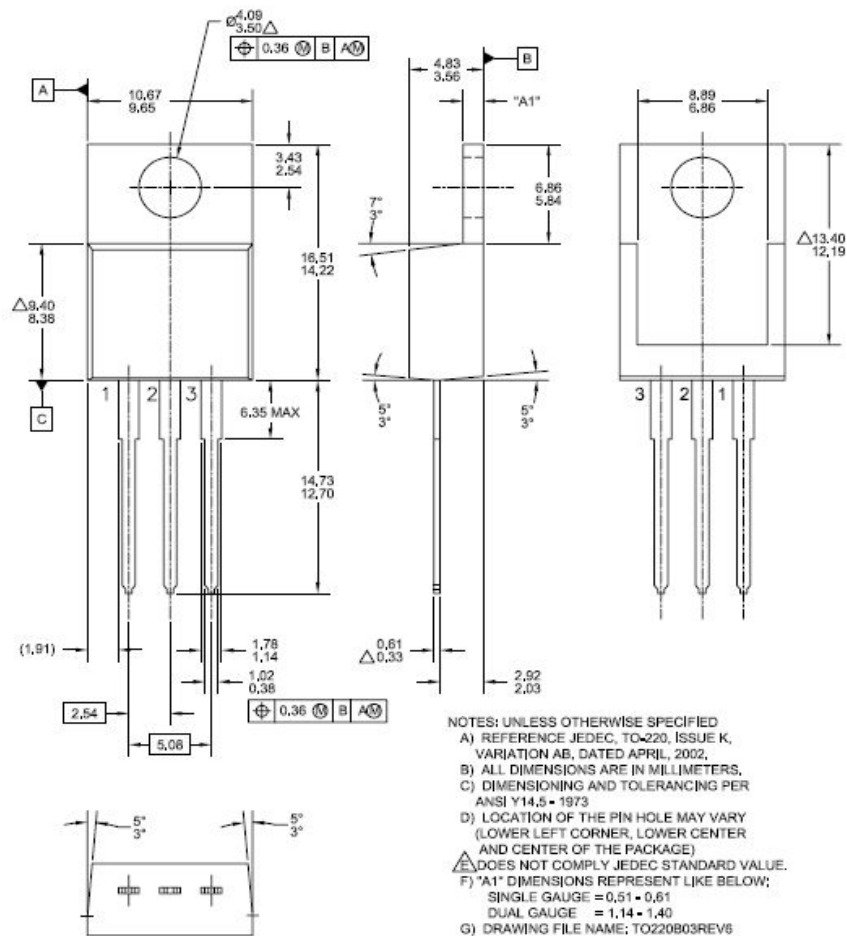


Figure 8. Power Derating

Package Dimension

TO-220

Dimensions are in mm



Dimensions in Millimeters



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