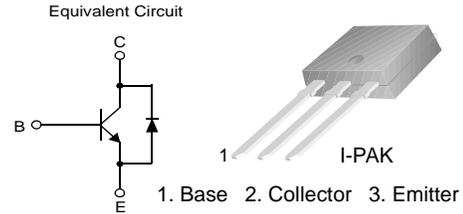


KSC5302DI

KSC5302DI

High Voltage & High Speed Power Switch Application

- Built-in Free-wheeling Diode makes efficient anti saturation operation
Suitable for half-bridge light ballast Applications
- No need to interest an hFE value because of low variable storage-time spread even though corner spirit
- Low base drive requirement



NPN Silicon Transistor

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

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	800	V
V_{CEO}	Collector-Emitter Voltage	400	V
V_{EBO}	Emitter-Base Voltage	12	V
I_C	Collector Current (DC)	2	A
I_{CP}	*Collector Current (Pulse)	5	A
I_B	Base Current (DC)	1	A
I_{BP}	*Base Current (Pulse)	2	A
P_C	Power Dissipation($T_C=25^\circ\text{C}$)	25	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	- 55 ~ 150	$^\circ\text{C}$

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

Symbol	Characteristics		Rating	Unit
$R_{\theta jc}$	Thermal Resistance	Junction to Case	5.0	$^\circ\text{C/W}$
$R_{\theta ja}$		Junction to Ambient	83.3	

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	$I_C=1\text{mA}, I_E=0$	800	-	-	V
BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C=5\text{mA}, I_B=0$	400	-	-	V
BV_{EBO}	Emitter Cut-off Current	$I_E=1\text{mA}, I_C=0$	12	-	-	V
I_{CBO}	Collector Cut-off Current	$V_{CB}=500\text{V}, I_E=0$	-	-	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	$V_{CE}=1\text{V}, I_C=0.4\text{A}$ $V_{CE}=1\text{V}, I_C=1\text{A}$	20 10	- -	- -	
$V_{CE}(\text{sat})$	Collector-Emitter Saturation Voltage	$I_C=0.4\text{A}, I_B=0.04\text{A}$ $I_C=1\text{A}, I_B=0.2\text{A}$	- -	- -	0.4 0.5	V V
$V_{BE}(\text{sat})$	Base-Emitter Saturation Voltage	$I_C=0.4\text{A}, I_B=0.04\text{A}$ $I_C=1\text{A}, I_B=0.2\text{A}$	- -	- -	0.9 1.0	V V
C_{ob}	Output Capacitance	$V_{CB}=10\text{V}, f=1\text{MHz}$	-	-	75	pF
t_{ON}	Turn ON Time	$V_{CC}=300\text{V}, I_C=1\text{A}$	-	-	150	ns
t_{STG}	Storage Time	$I_{B1}=0.2\text{A}, I_{B2}=-0.5\text{A}$ $R_L=300\Omega$	-	-	2	μs
t_F	Fall Time		-	-	0.2	μs
t_{STG}	Storage Time	$V_{CC}=15\text{V}, V_Z=300\text{V}$ $I_C=0.8\text{A}, I_{B1}=0.16\text{A}$ $I_{B2}=-0.16\text{A}$ $L_C=200\mu\text{H}$	-	-	2.35	μs
t_F	Fall Time		-	-	150	ns
V_F	Diode Forward Voltage	$I_F=0.4\text{A}$ $I_F=1\text{A}$	- -	- -	1.2 1.5	V V
t_{rr}	* Reverse Recovery Time ($di/dt=10\text{A}/\mu\text{s}$)	$I_F=0.2\text{A}$ $I_F=0.4\text{A}$ $I_F=1\text{A}$	- - -	800 1.0 1.4	- - -	ns μs μs

*Pulse Test : Pulse Width=5, Duty cycles $\leq 10\%$

Typical Characteristics

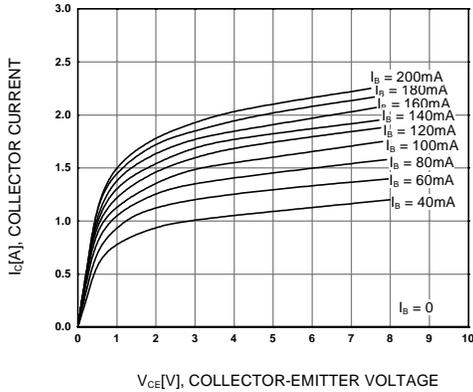


Figure 1. Static Characteristic

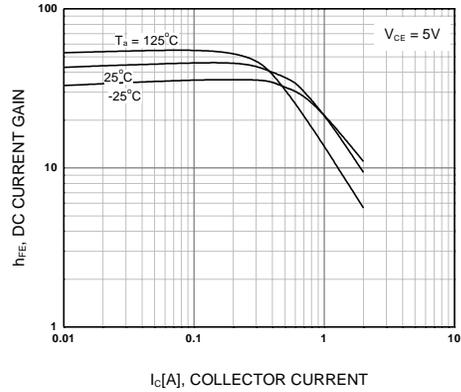


Figure 2. DC current Gain

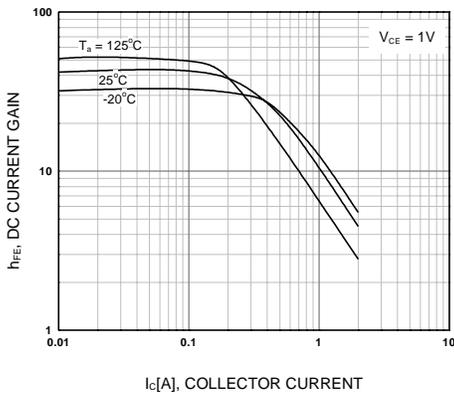


Figure 3. DC current Gain

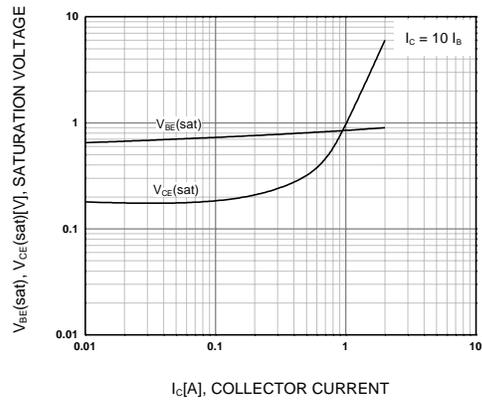


Figure 4. Collector-Emitter Saturation Voltage
Base-Emitter Saturation Voltage

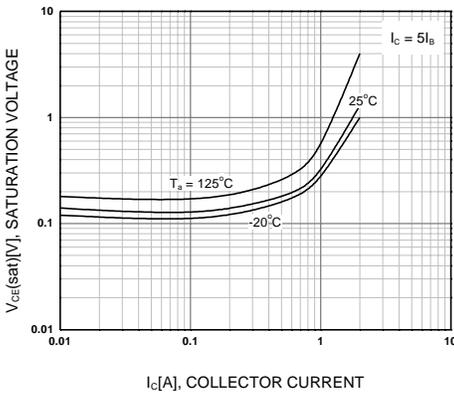


Figure 5. Collector-Emitter Saturation Voltage

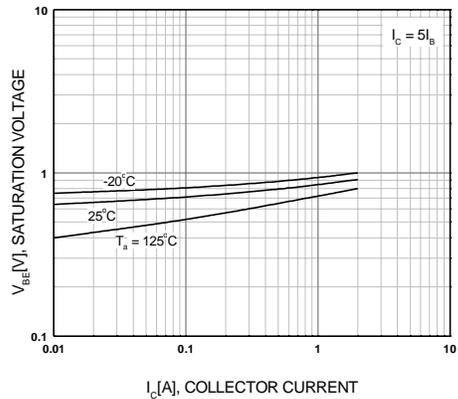


Figure 6. Base-Emitter Saturation Voltage

Typical Characteristics (Continued)

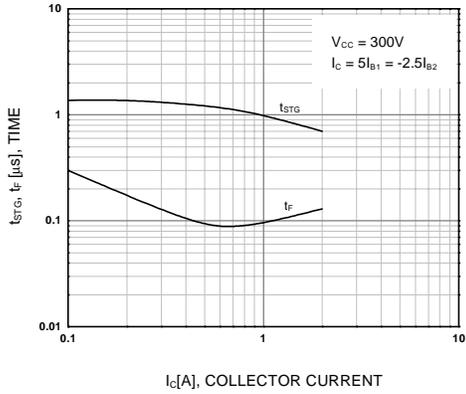


Figure 7. Switching Time

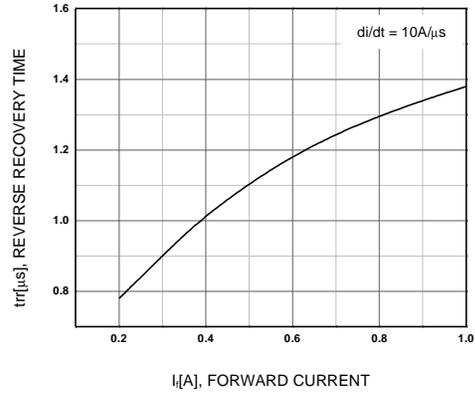


Figure 8. Forward Diode Voltage

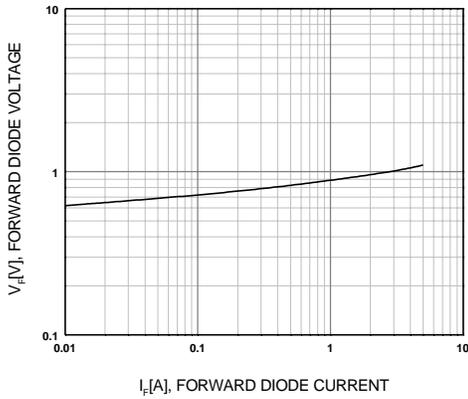


Figure 9. Reverse Recovery Time

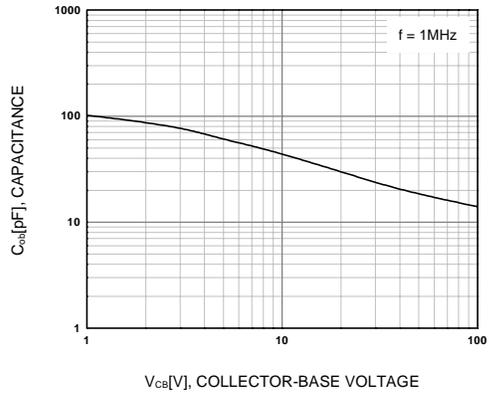


Figure 10. Collector Output Capacitance

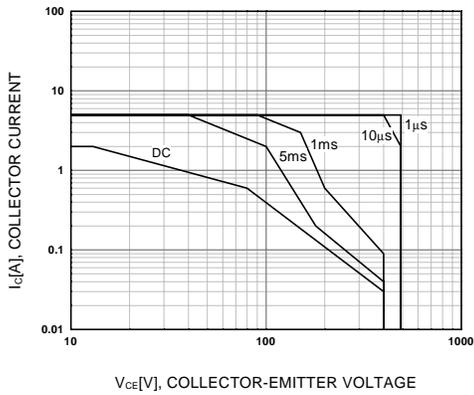


Figure 11. Safe Operating Area

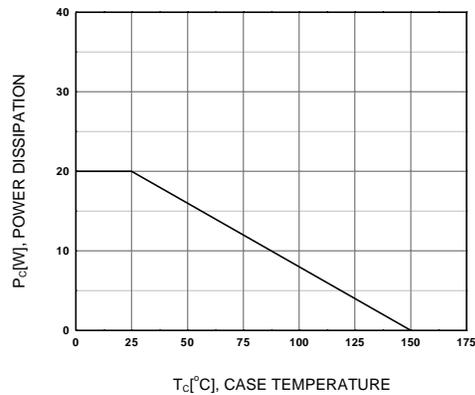
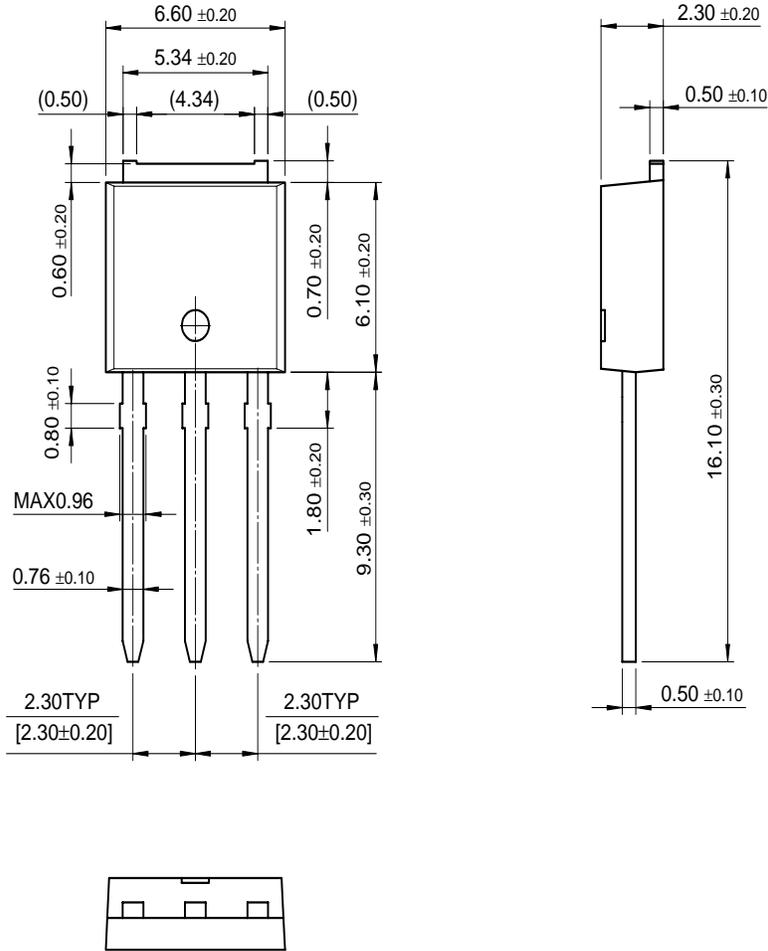


Figure 12. Power Derating

Package Dimensions

I-PAK



Dimensions in Millimeters

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