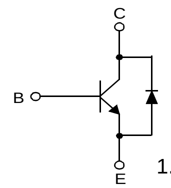
FAIRCHILD SEMICONDUCTOR®

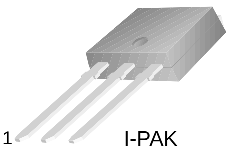
KSC5302DI

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

Equivalent Circuit





1. Base 2. Collector 3. Emitter

NPN Silicon Transistor

Absolute Maximum Ratings T_C=25°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°C)	25	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	- 55 ~ 150	°C

Thermal Characteristics T_C=25°C unless otherwise noted

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

Electrical Characteristics T_C=25°C unless otherwise noted

Symbol	Parameter	Test Condition	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	400	-	-	V
BV_{EBO}	Emitter Cut-off Current	I_E=1mA, I_C=0	12	-	-	V
I_{CBO}	Collector Cut-off Current	V_{CB}=500V, I_E=0	-	-	10	µA
I_{EBO}	Emitter Cut-off Current	V_{EB} = 9V, I_C = 0	-	-	10	µA
h_{FE1} h_{FE2}	DC Current Gain	V_{CE}=1V, I_C=0.4A V_{CE}=1V,I_C=1A	20 10	- -	- -	
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C=0.4A, I_B=0.04A I_C=1A, I_B=0.2A	- -	- -	0.4 0.5	V V
V_{BE}(sat)	Base-Emitter Saturation Voltage	I_C=0.4A, I_B=0.04A I_C=1A, I_B=0.2A	- -	- -	0.9 1.0	V V
C_{ob}	Output Capacitance	VCB = 10V, f=1MHz	-	-	75	pF
t_{ON}	Turn ON Time	V_{CC}=300V, I_C =1A I_{B1} = 0.2A, I_{B2}=-0.5A R_L = 300Ω	-	-	150	ns
t_{STG}	Storage Time		-	-	2	µs
t_F	Fall Time		-	-	0.2	µs
t_{STG}	Storage Time	V_{CC}=15V,V_Z=300V I_C = 0.8A,I_{B1} = 0.16A I_{B2} = -0.16A L_C=200µH	-	-	2.35	µs
t_F	Fall Time		-	-	150	ns
V_F	Diode Forward Voltage	I_F = 0.4A I_F = 1A	- -	- -	1.2 1.5	V V
t_{rr}	* Reverse Recovery Time (di/dt = 10A/µs)	I_F = 0.2A I_F = 0.4A I_F = 1A	- - -	800 1.0 1.4	- - -	ns µs µs

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

Typical Characteristics

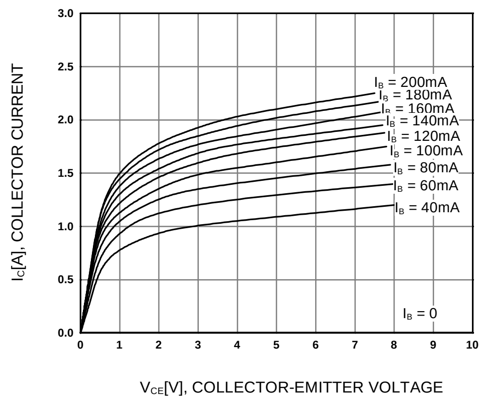


Figure 1. Static Characteristic

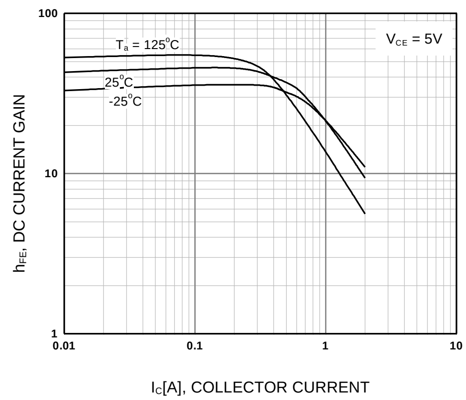


Figure 2. DC current Gain

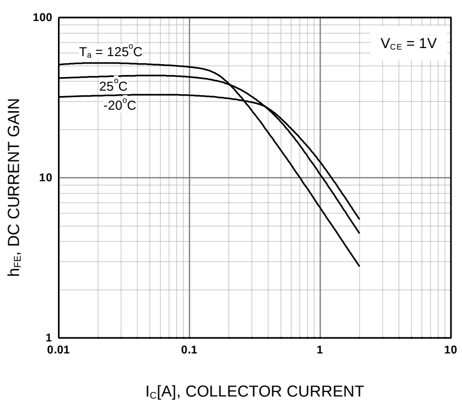


Figure 3. DC current Gain

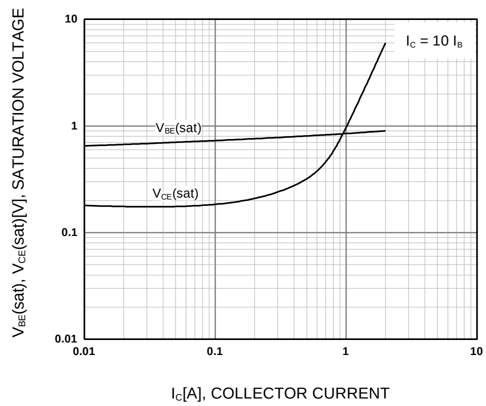


Figure 4. Collector-Emitter Saturation Voltage Base-Emitter Saturation Voltage

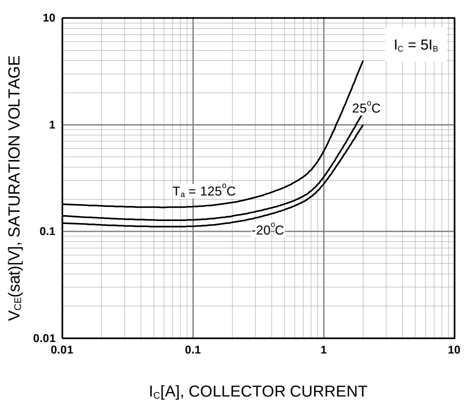


Figure 5. Collector-Emitter Saturation Voltage

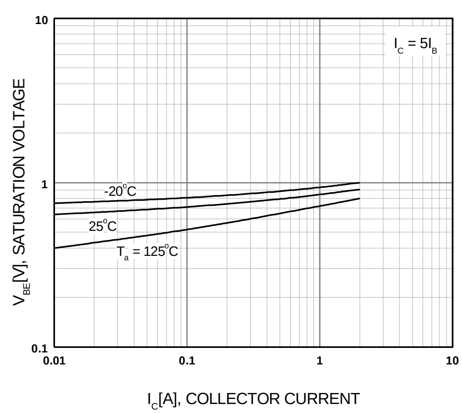


Figure 6. Base-Emitter Saturation Voltage

Typical Characteristics (Continued)

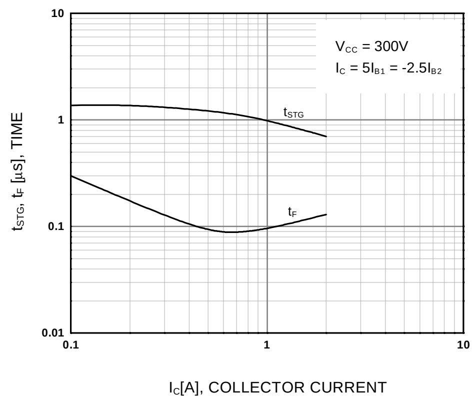


Figure 7. Switching Time

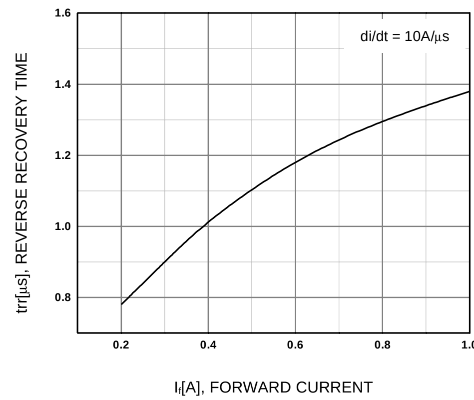


Figure 8. Forward Diode Voltage

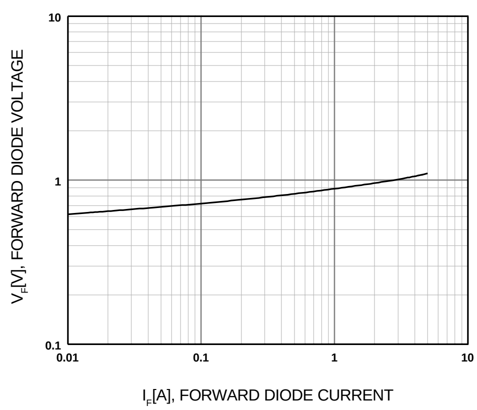


Figure 9. Reverse Recovery Time

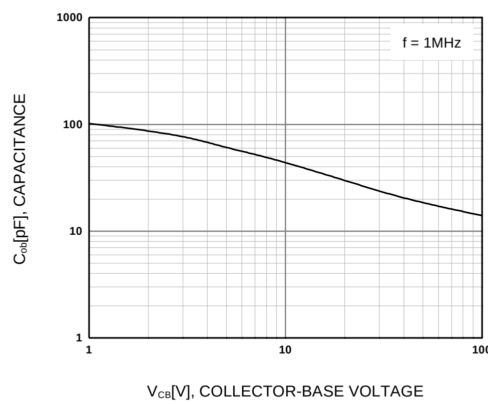


Figure 10. Collector Output Capacitance

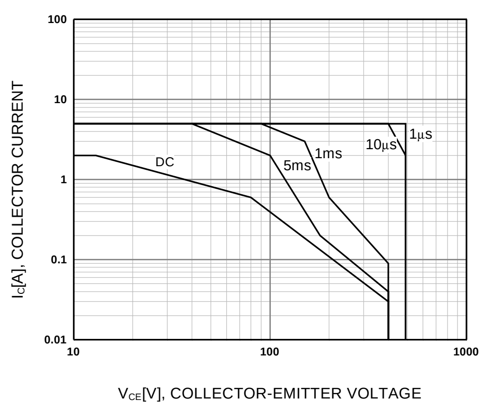


Figure 11. Safe Operating Area

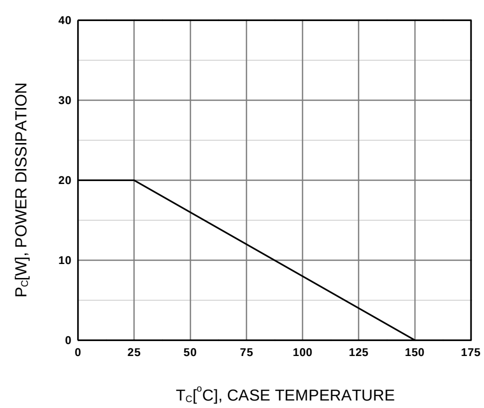
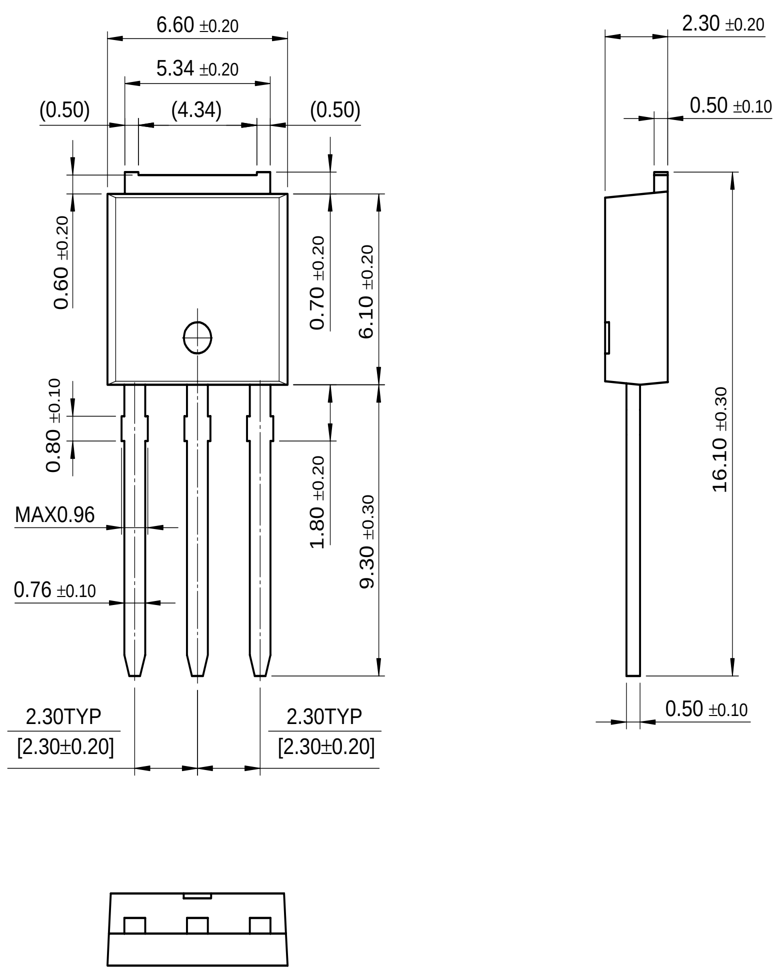


Figure 12. Power Derating

Package Demensions

I-PAK



Dimensions in Millimeters

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Definition of Terms

Datasheet Identification	Product Status	Definition
Advance Information	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice.
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KSC5302DI
NPN Silicon Transistor

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Design tools

Features

- 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

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Applications

High Voltage & High Speed Power Switch

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Product status/pricing/packaging

Product	Product status	Pricing*	Package type	Leads	Packing method
KSC5302DITU	Full Production	$0.45	TO-251(IPAK)	3	RAIL

* 1,000 piece Budgetary Pricing

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