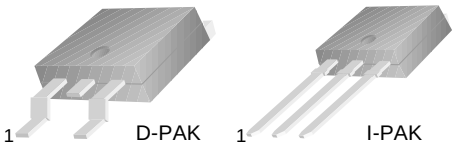
FAIRCHILD
SEMICONDUCTOR®

KSH31/31C

General Purpose Amplifier
Low Speed Switching Applications

- Lead Formed for Surface Mount Application (No Suffix)
- Straight Lead (I-PAK, "- I" Suffix)
- Electrically Similar to Popular TIP31 and TIP31C



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		
	: KSH31	40	V
	: KSH31C	100	V
V_{CEO}	Collector-Emitter Voltage		
	: KSH31	40	V
	: KSH31C	100	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current (DC)	3	A
I_{CP}	Collector Current (Pulse)	5	A
I_B	Base Current	1	A
P_C	Collector Dissipation (T_C=25°C)	15	W
	Collector Dissipation (T_a=25°C)	1.56	W
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	- 65 ~ 150	°C

Electrical Characteristics T_C=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Max.	Units
V_{CEO}(sus)	* Collector-Emitter Sustaining Voltage				
	: KSH31	I_C = 30mA, I_B = 0	40		V
	: KSH31C		100		V
I_{CEO}	Collector Cut-off Current				
	: KSH31	V_{CE} = 40V, I_B = 0		50	µA
	: KSH31C	V_{CE} = 60V, I_B = 0		50	µA
I_{CES}	Collector Cut-off Current				
	: KSH31	V_{CE} = 40V, V_{BE} = 0		20	µA
	: KSH31C	V_{CE} = 100V, V_{BE} = 0		20	µA
I_{EBO}	Emitter Cut-off Current	V_{BE} = 5V, I_C = 0		1	mA
h_{FE}	* DC Current Gain	V_{CE} = 4V, I_C = 1A	25		
		V_{CE} = 4V, I_C = 3A	10	50	
V_{CE}(sat)	* Collector-Emitter Saturation Voltage	I_C = 3A, I_B = 375mA		1.2	V
V_{BE}(on)	* Base-Emitter On Voltage	V_{CE} = 4A, I_C = 3A		1.8	V
f_T	Current Gain Bandwidth Product	V_{CE} = 10V, I_C = 500mA	3		MHz

* Pulse Test: PW≤300µs, Duty Cycle≤2%

Typical Characteristics

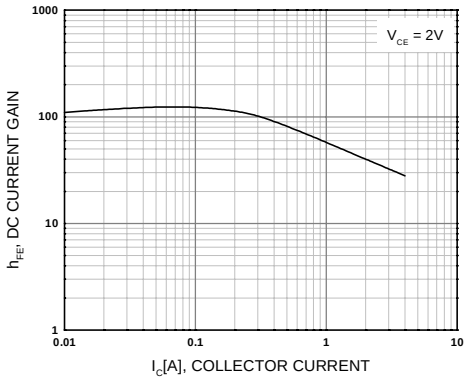


Figure 1. DC current Gain

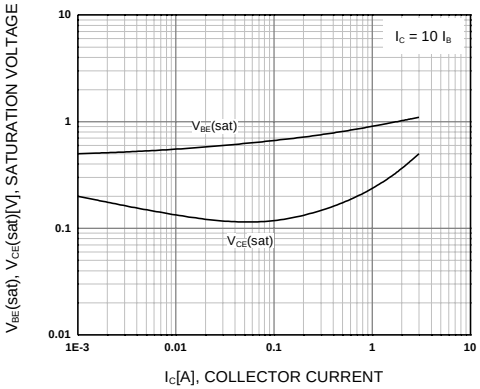


Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

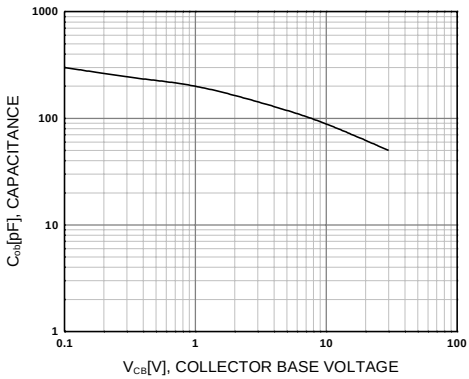


Figure 3. Collector Capacitance

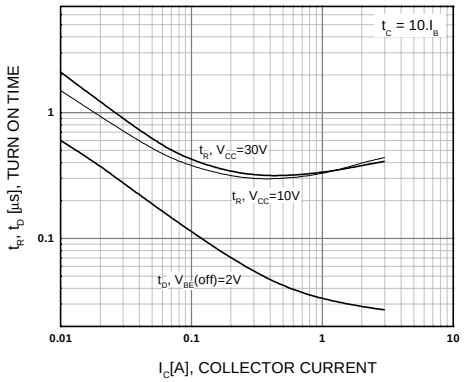


Figure 4. Turn On Time

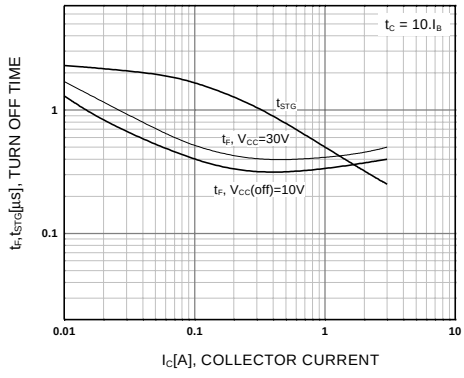


Figure 5. Turn Off Time

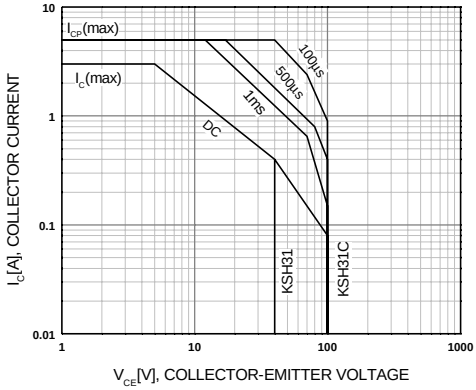


Figure 6. Safe Operating

Typical Characteristics (Continued)

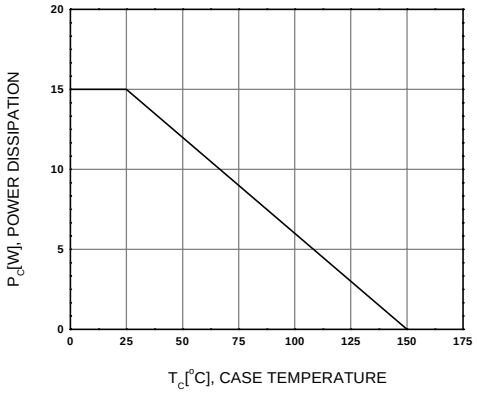
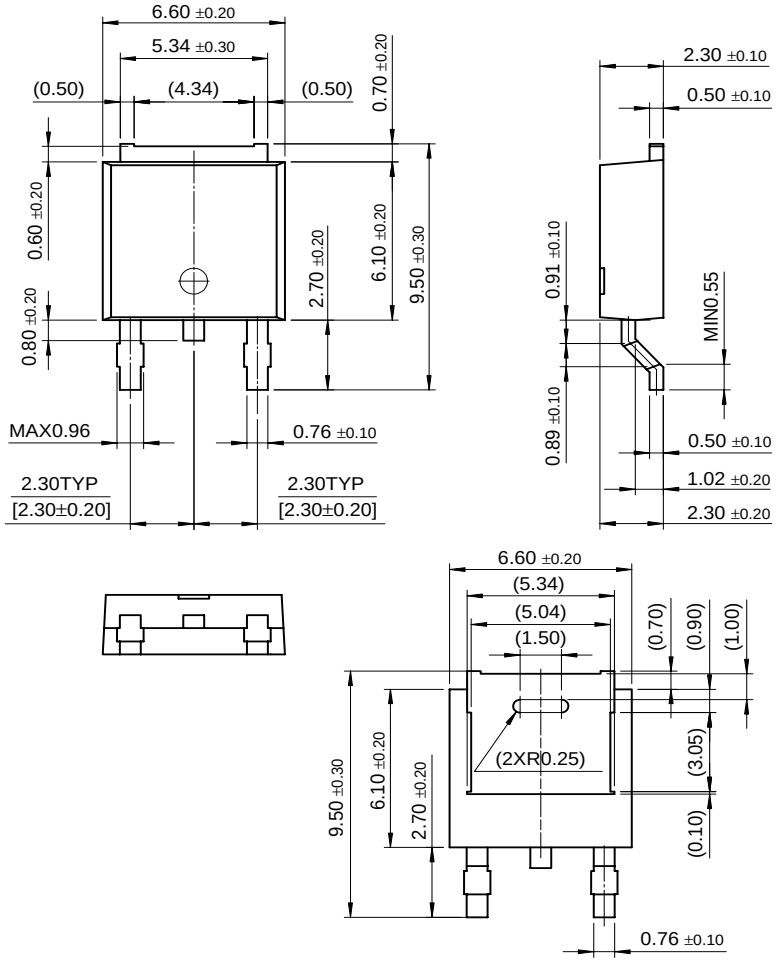


Figure 7. Power Derating

Package Dimensions

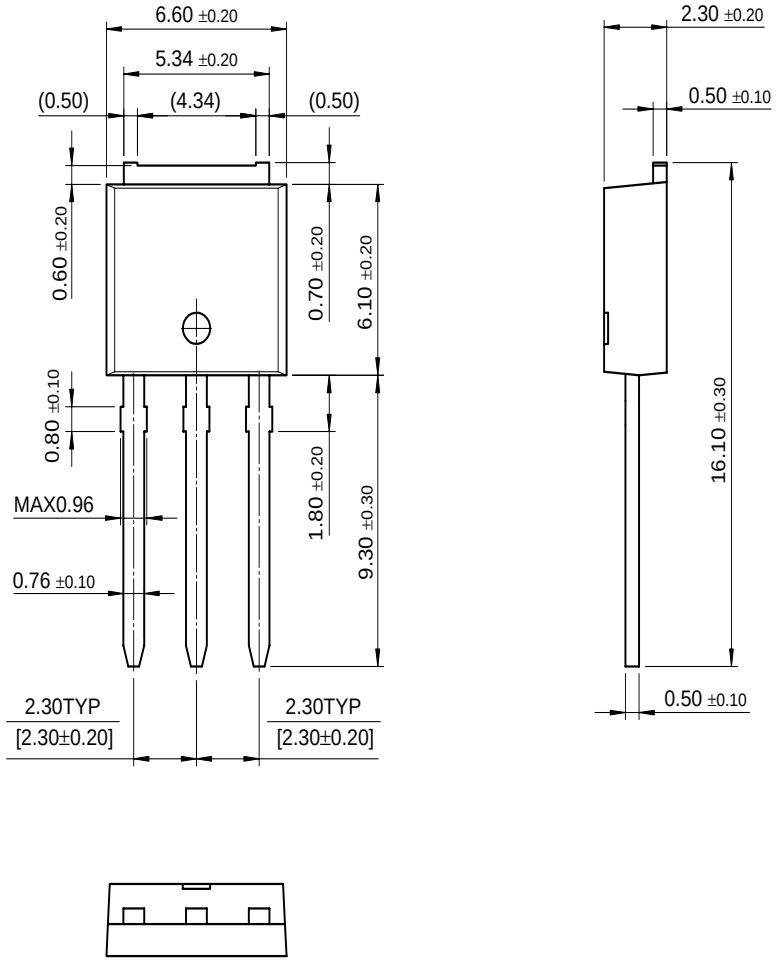
D-PAK



Dimensions in Millimeters

Package Dimensions (Continued)

I-PAK



Dimensions in Millimeters

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CoolFET™	FASTr™	MicroFET™	PowerTrench®	SuperSOT™-6
CROSSVOLT™	FRFET™	MicroPak™	QFET™	SuperSOT™-8
DOME™	GlobalOptoisolator™	MICROWIRE™	QS™	SyncFET™
EcoSPARK™	GTO™	MSX™	QT Optoelectronics™	TinyLogic™
E^2CMOS™	HiSeC™	MSXPro™	Quiet Series™	TruTranslation™
EnSigna™	I^2C™	OCX™	RapidConfigure™	UHC™
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Programmable Active Droop™		OPTOPLANAR™	SMART START™	

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