FAIRCHILD SEMICONDUCTOR®

November 2013

KSH122 / KSH122I
NPN Silicon Darlington Transistor

Features

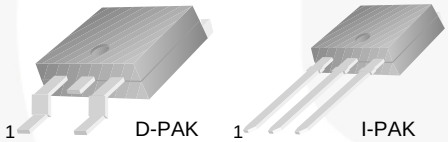
- D-PAK for Surface Mount Applications
- High DC Current Gain
- Built-in Damper Diode at E-C
- Lead Formed for Surface Mount Applications (No Suffix)
- Straight Lead (I-PAK, " - I " Suffix)
- Electrically Similar to Popular TIP122
- Complement to KSH127

Applications

- Switching Regulators
- Converters
- Power Amplifiers

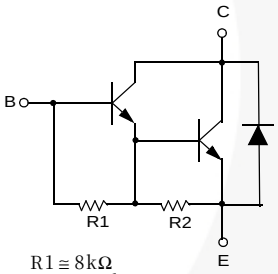
Description

Designed for general-purpose power and switching, such as output or driver stages in applications.



1.Base 2.Collector 3.Emitter

Equivalent Circuit



$R1 \cong 8k\Omega$
$R2 \cong 0.12k\Omega$

Ordering Information

Part Number	Top Mark	Package	Packing Method
KSH122TF	KSH122	TO-252 3L (DPAK)	Tape and Reel
KSH122TM	KSH122	TO-252 3L (DPAK)	Tape and Reel
KSH122ITU	KSH122-I	TO-251 3L (IPAK)	Rail

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at T_C = 25°C unless otherwise noted.

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	100	V
V_{CEO}	Collector-Emitter Voltage	100	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current (DC)	8	A
I_{CP}	Collector Current (Pulse)	16	A
I_B	Base Current	120	mA
P_C	Collector Dissipation (T_C=25°C)	20.00	W
	Collector Dissipation (T_A=25°C)	1.75	
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	- 65 to 150	°C

Electrical Characteristics

Values are at T_C = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{CEO}(sus)	Collector-Emitter Sustaining Voltage[1]	I_C = 30 mA, I_B = 0	100			V
I_{CEO}	Collector Cut-Off Current	V_{CE} = 50 V, I_B =0			10	μA
I_{CBO}	Collector Cut-Off Current	V_{CB} = 100 V, I_E = 0			10	μA
I_{EBO}	Emitter Cut-Off Current	V_{EB} = 5 V, I_C = 0			2	mA
h_{FE}	DC Current Gain[1]	V_{CE} = 4 V, I_C = 4 A	1000		12000	
		V_{CE} = 4 V, V_{EB} = 8 A	100			
V_{CE}(sat)	Collector-Emitter Saturation Voltage[1]	I_C = 4 A, I_B = 16 mA			2	V
		I_C = 8 A, I_B = 80 mA			4	
V_{BE}(sat)	Base-Emitter Saturation Voltage[1]	I_C = 8 A, I_B = 80 mA			4.5	V
V_{BE}(on)	Base-Emitter On Voltage[1]	V_{CE} = 4 V, I_C = 4 A			2.8	V
C_{ob}	Output Capacitance	V_{CB} = 10 V, I_E = 0, f = 0.1 MHz			200	pF

Note:

1. Pulse test: pw ≤ 300 μs, duty cycle ≤ 2%.

Typical Performance Characteristics

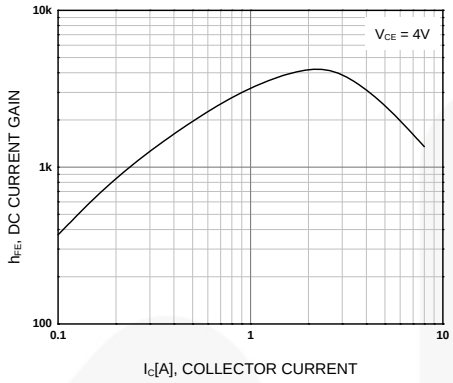


Figure 1. DC Current Gain

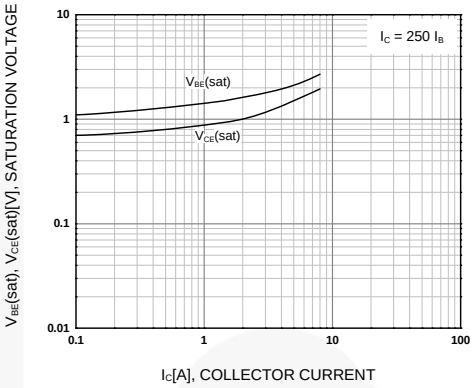


Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

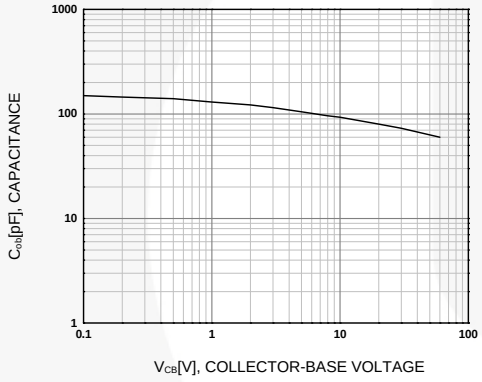


Figure 3. Collector Output Capacitance

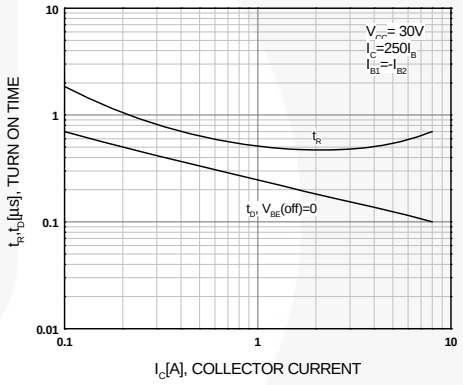


Figure 4. Turn-On Time

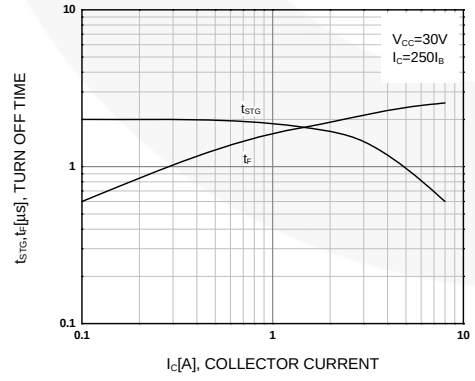


Figure 5. Turn-Off Time

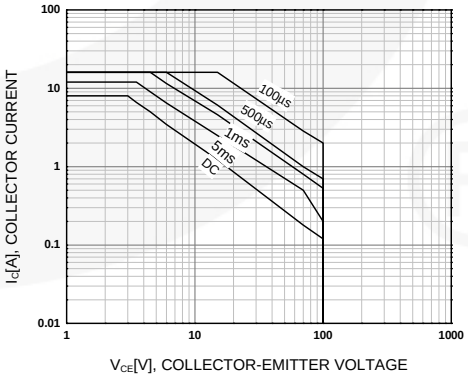


Figure 6. Safe Operating Area

Typical Performance Characteristics (Continued)

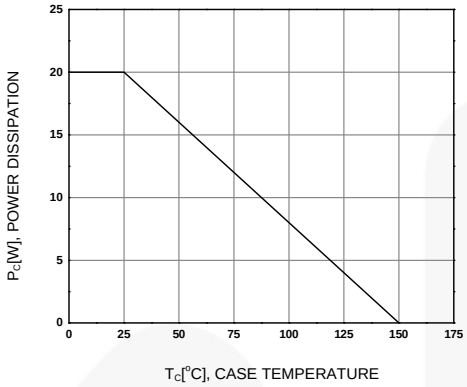


Figure 7. Power Derating

Physical Dimensions

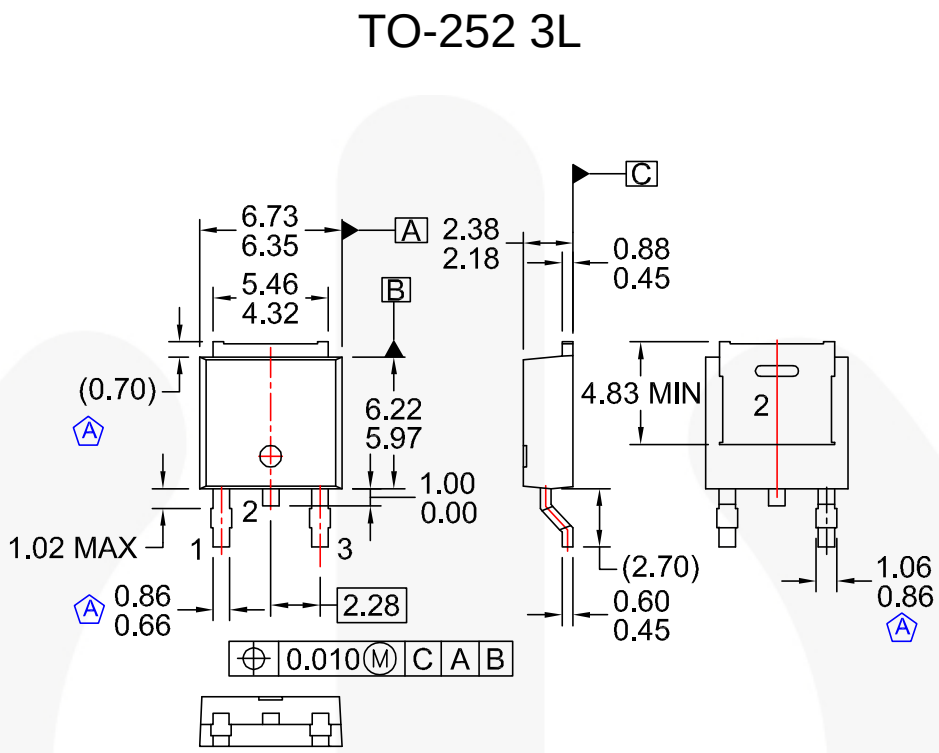


Figure 7. 3-LEAD, TO-252, JEDEC TO-252 VAR. AB, SURFACE MOUNT (DPAK) (ACTIVE)

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Physical Dimensions (Continued)

TO-251 3L

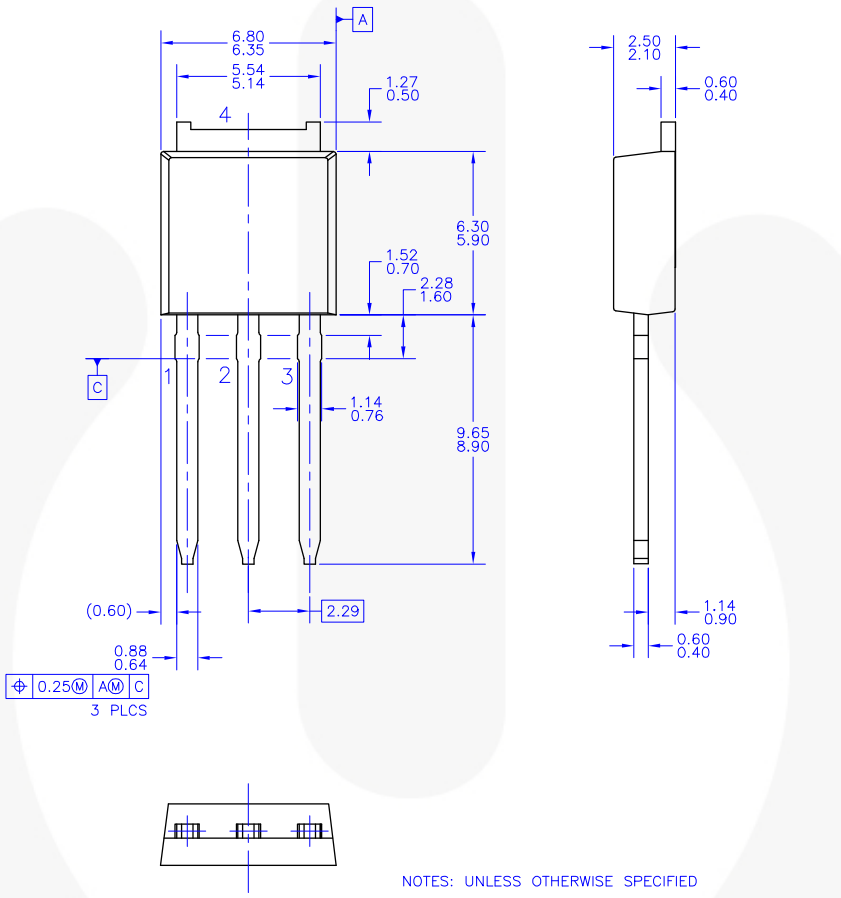

Figure 8. TO-251 (IPAK) MOLDED, 3-LEAD (ACTIVE)

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