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Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor's system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.

March 2016

KSH122 / KSH122I
NPN Silicon Darlington Transistor

Features

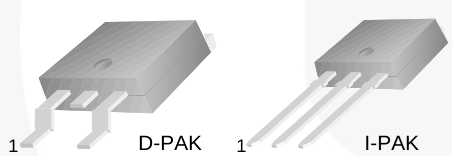
- D-PAK for Surface Mount Applications
- High DC Current Gain
- Built-in Damper Diode at E-C
- Lead Formed for Surface Mount Applications (No Suffix)
- Straight Lead (I-PAK, " - I " Suffix)
- Electrically Similar to Popular TIP122
- Complement to KSH127

Applications

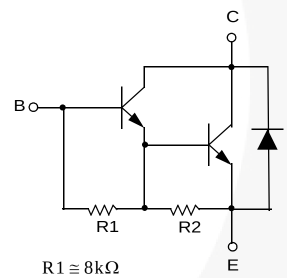
- Switching Regulators
- Converters
- Power Amplifiers

Description

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



Equivalent Circuit



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_A = 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, I_C = 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

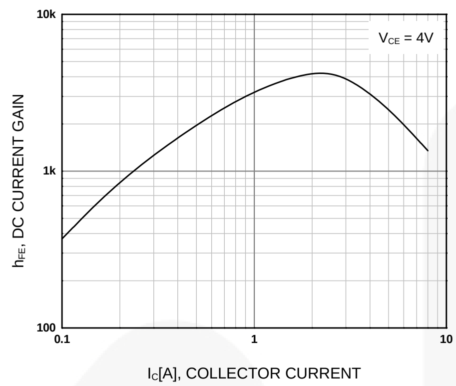


Figure 1. DC Current Gain

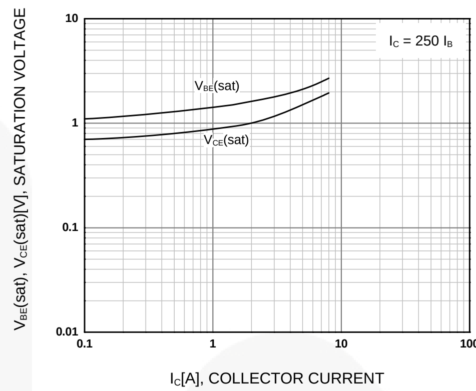


Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

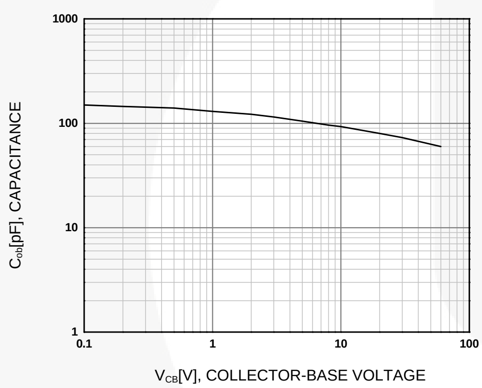


Figure 3. Collector Output Capacitance

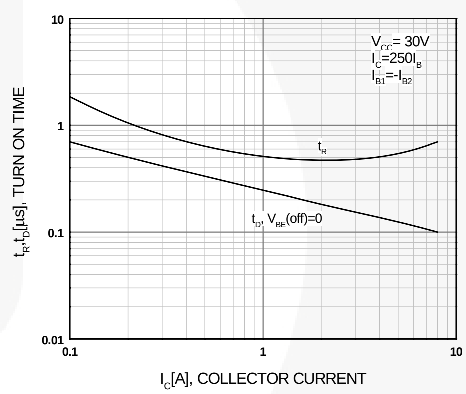


Figure 4. Turn-On Time

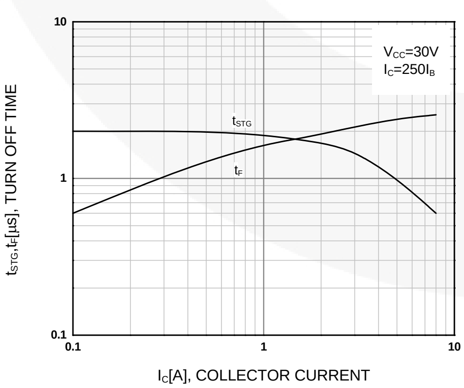


Figure 5. Turn-Off Time

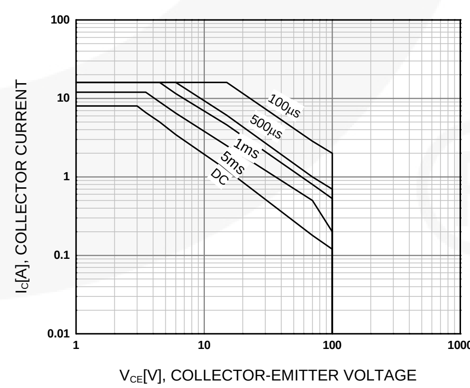


Figure 6. Safe Operating Area

Typical Performance Characteristics (Continued)

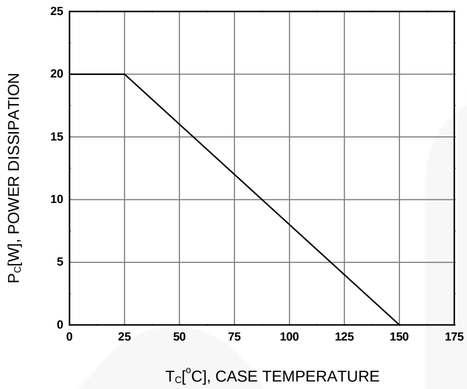
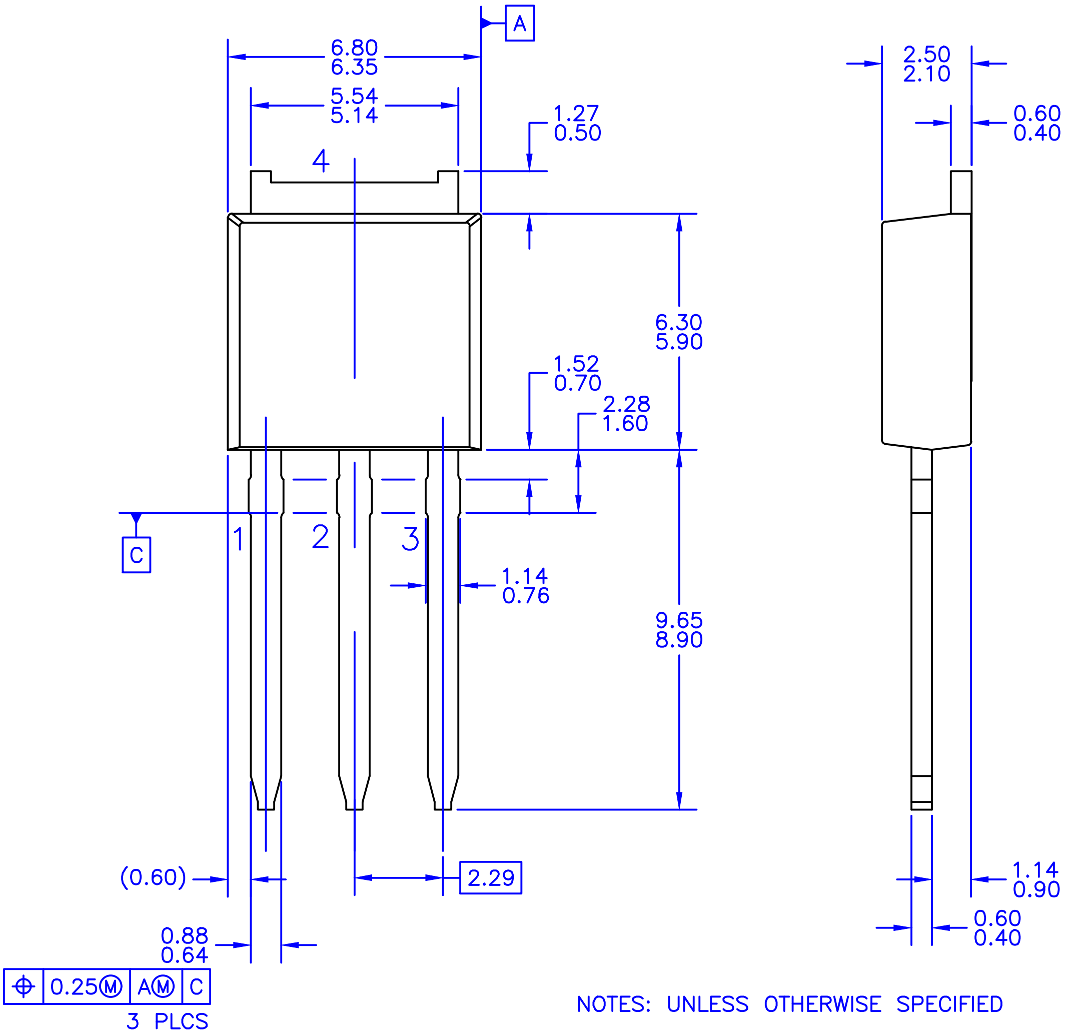
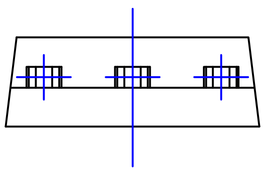


Figure 7. Power Derating





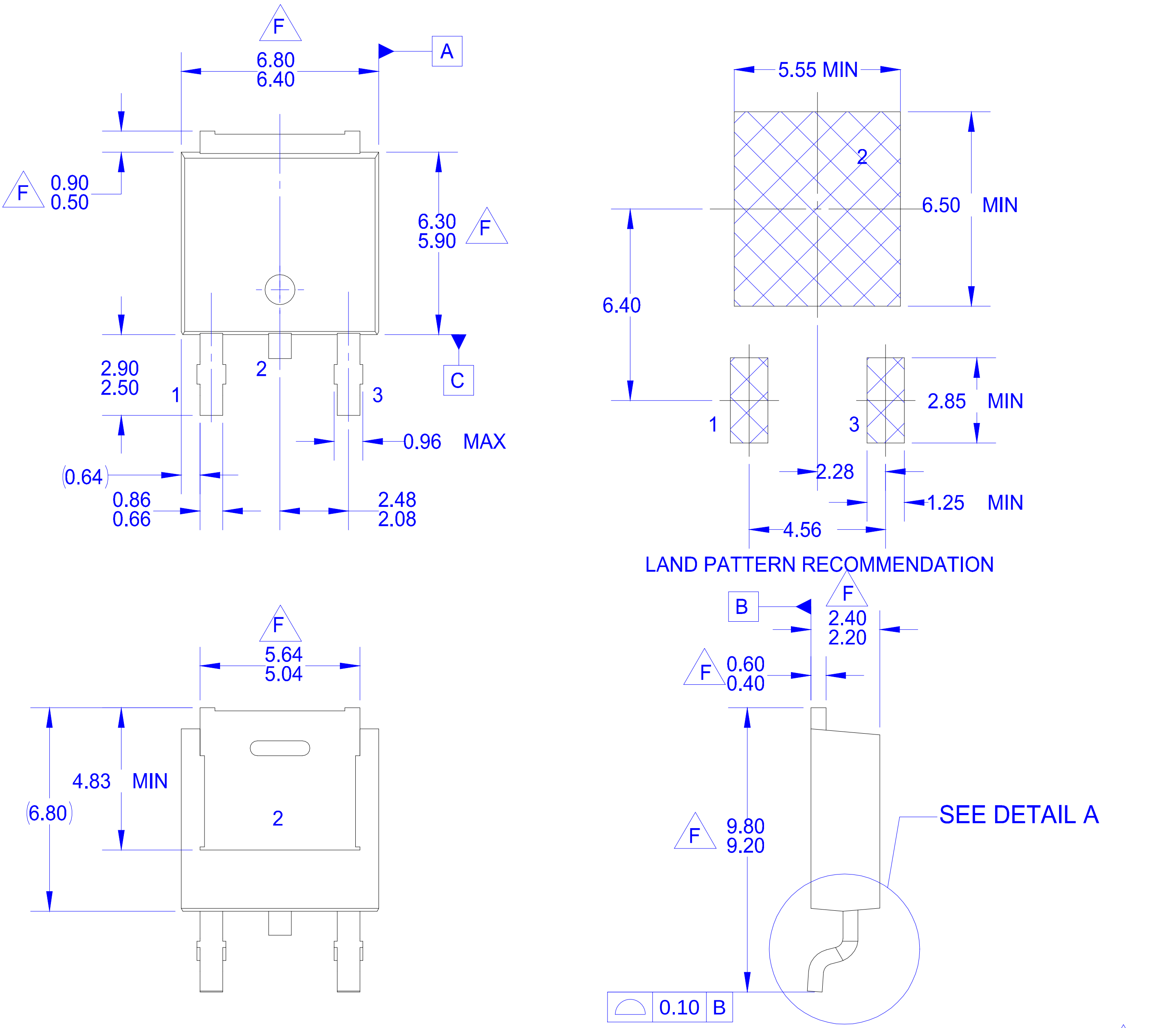
NOTES: UNLESS OTHERWISE SPECIFIED

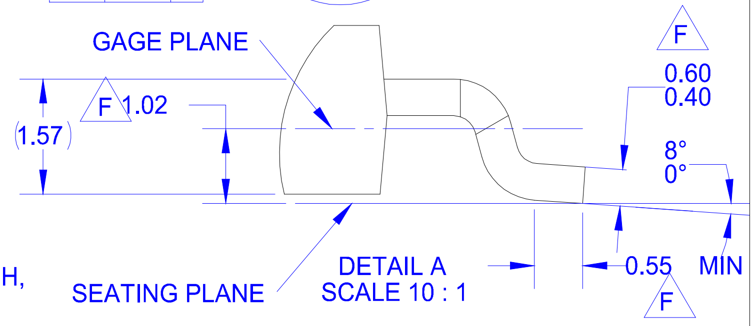
A) ALL DIMENSIONS ARE IN MILLIMETERS.

B) THIS PACKAGE CONFORMS TO JEDEC, TO–251, ISSUE C, VARIATION AA, DATED SEP 1988.

C) DIMENSIONING AND TOLERANCING PER ASME Y14.5M–1994.

D) DRAWING NUMBER AND REVISION: MKT–TO251A03REV2





NOTES:UNLESS OTHERWISE SPECIFIED

A) NOT COMPLIANT TO JEDEC TO-252 VARIATION AB
B) ALL DIMENSION ARE IN MILLIMETER
C) DIMENSIONS ARE EXCLUSIVE OF BURRS,MOLD FLASH, AND TIE BAR EXTRUSIONS
D) LAD PATTERN PER IPC7351A ATANDARD TO228P991X239-3N
E) DRAWING FILE NAME:MKT-TO252D03REV4.
F) DOES NOT COMPLY JEDEC STANDARD VALUE.
G) FAIRCHILD SEMICONDUCTOR.

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