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October 2015

KSD5041
NPN Epitaxial Silicon Transistor

Features

- AF Output Amplifier for Electronic Flash Unit
- Low Collector-Emitter Saturation Voltage
- High Performance at Low Supply Voltage

TO-92
1. Emitter
2. Collector
3. Base

Straight Lead Bulk Packing

Bent Lead Tape & Reel Ammo Packing

Ordering Information

Part Number	Top Mark	Package	Packing Method
KSD5041RTA	D5041	TO-92 3L	Ammo
KSD5041QTA	D5041	TO-92 3L	Ammo

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_A = 25°C unless otherwise noted.

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	40	V
V_{CEO}	Collector-Emitter Voltage	20	V
V_{EBO}	Emitter-Base Voltage	7	V
I_C	Collector Current	5	A
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	-55 to 150	°C

Thermal Characteristics[1]

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

Symbol	Parameter	Value	Unit
P_D	Power Dissipation	0.75	W
	Derate Above 25°C	6.0	mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	166.6	°C/W

Note:

1. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

Electrical Characteristics

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{CEO}	Collector-Emitter Breakdown Voltage	I_C = 1 mA, I_B = 0	20			V
BV_{EBO}	Emitter-Base Breakdown Voltage	I_E = 10 µA, I_C = 0	7			V
I_{CBO}	Collector Cut-Off Current	V_{CB} = 10 V, I_E = 0			0.1	µA
I_{EBO}	Emitter Cut-Off Current	V_{EB} = 7 V, I_C = 0			0.1	µA
h_{FE1}	DC Current Gain	V_{CE} = 2 V, I_C = 0.5 A	180		600	
h_{FE2}		V_{CE} = 2 V, I_C = 2 A	150			
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C = 3 A, I_B = 0.1 A			1	V
f_T	Current Gain Bandwidth Product	V_{CE} = 6 V, I_C = 50 mA		150		MHz
C_{ob}	Output Capacitance	V_{CB} = 20 V, I_E = 0, f = 1 MHz			50	pF

h_{FE} Classification

Classification	P	O	R
h_{FE1}	180 ~ 270	230 ~ 380	340 ~ 600

Typical Performance Characteristics

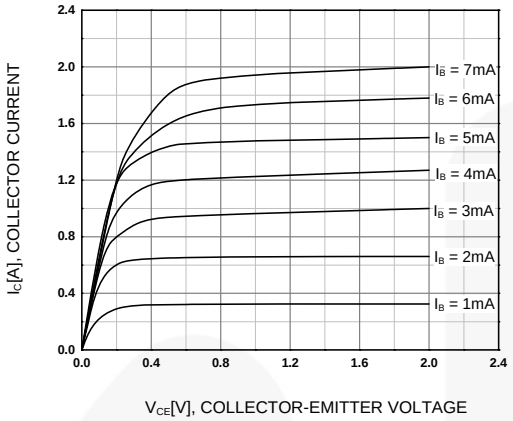

Figure 1. Static Characteristic

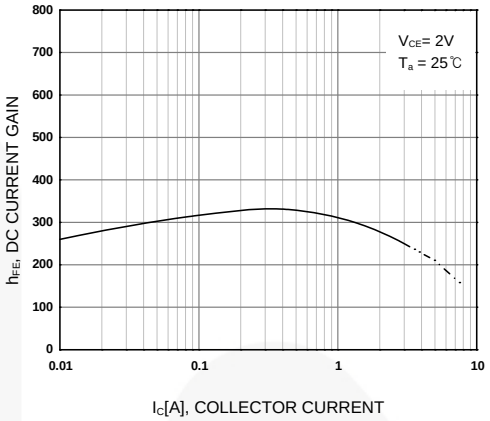

Figure 2. DC Current Gain

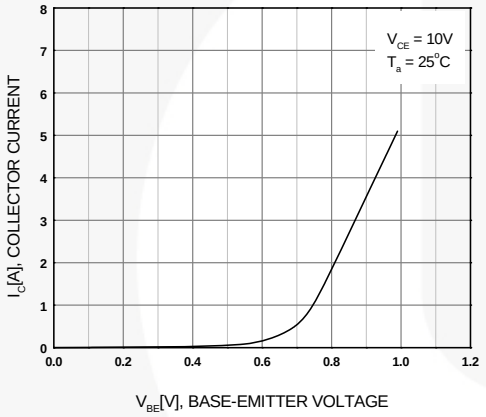

Figure 3. Base-Emitter Saturation Voltage

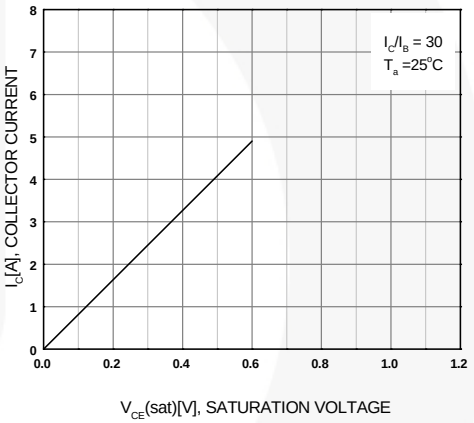

Figure 4. Collector-Emitter Saturation Voltage

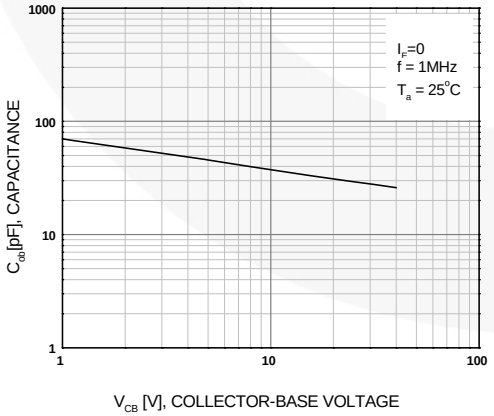

Figure 5. Collector Output Capacitance

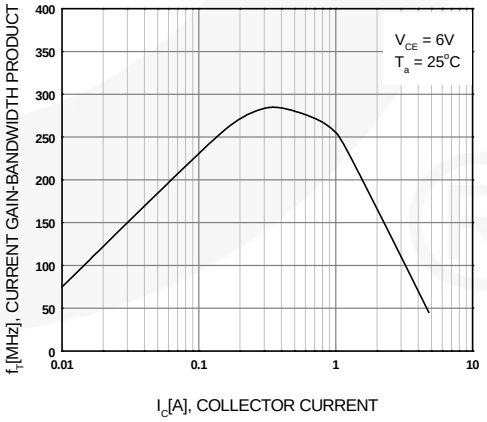

Figure 6. Current Gain Bandwidth Product

Typical Performance Characteristics (Continued)

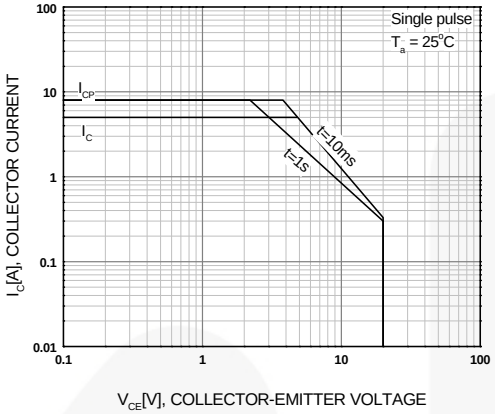

Figure 7. Safe Operating Area

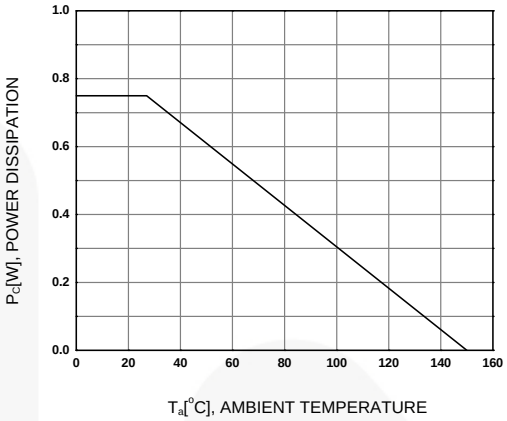

Figure 8. Power Derating

Physical Dimensions

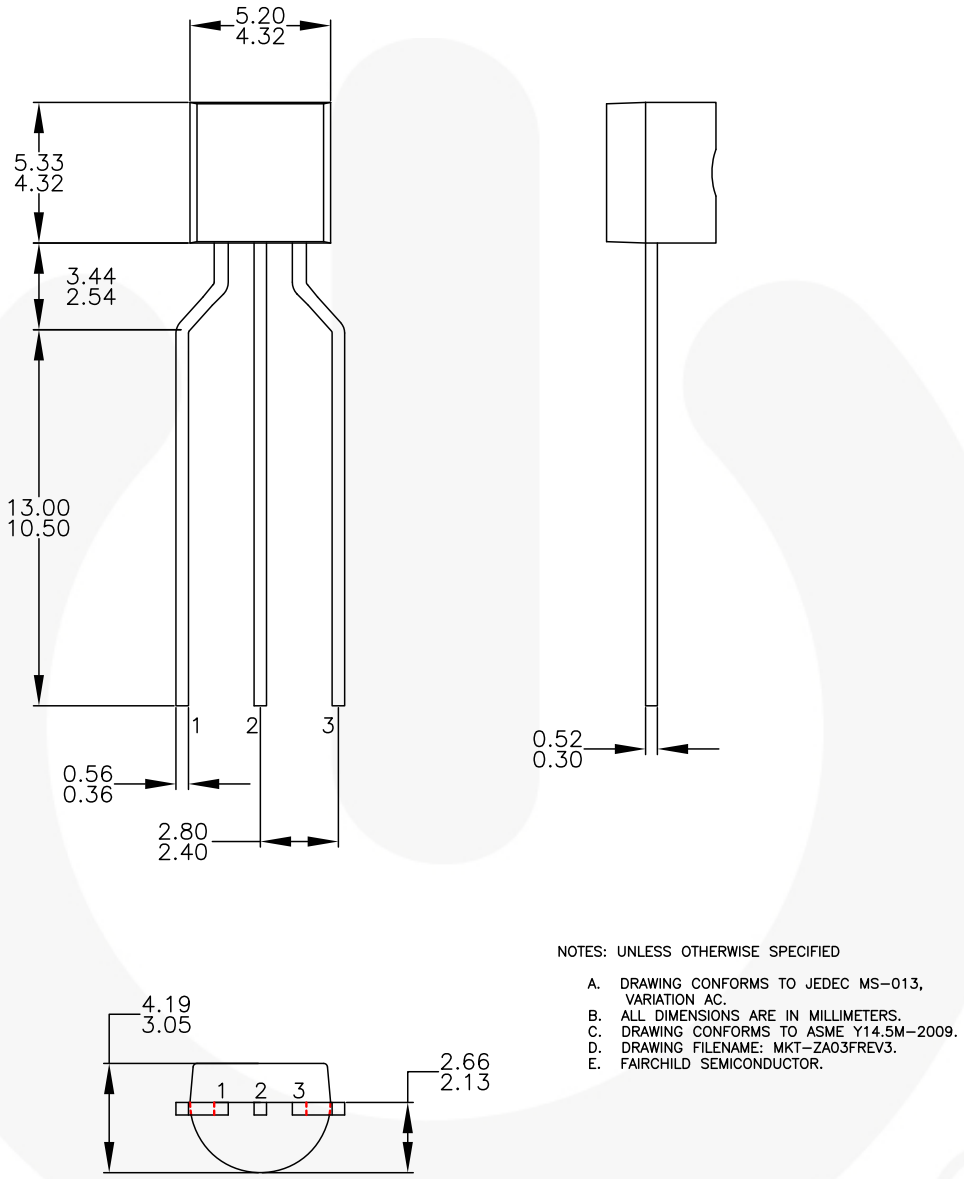

Figure 9. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo Type

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