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October 2015



KSC388 NPN Epitaxial Silicon Transistor

Features

- TV Final Picture IF Amplifier Applications
- $G_{PE} = 33$ dB (Typical) at $f = 45$ MHz
- Suffix “-C” means Center Collector (1. Emitter 2. Collector 3. Base)
- Non Suffix “-C” means Side Collector (1. Emitter 2. Base 3. Collector)



Ordering Information

Part Number	Top Mark	Package	Packing Method
KSC388CYTA	C388	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 $T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	30	V
V_{CEO}	Collector-Emitter Voltage	25	V
V_{EBO}	Emitter-Base Voltage	4	V
I_C	Collector Current	50	mA
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	-55 to 150	$^\circ\text{C}$

Thermal Characteristics⁽¹⁾

Values are at $T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Value	Unit
P_D	Power Dissipation	300	mW
	Derate Above 25°C	2.4	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	416	$^\circ\text{C}/\text{W}$

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 $T_A = 25^\circ\text{C}$ unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{CBO}	Collector-Base Breakdown Voltage	$I_C = 10 \mu\text{A}$, $I_E = 0$	30			V
BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C = 5 \text{ mA}$, $I_B = 0$	25			V
I_{CBO}	Collector Cut-Off Current	$V_{CB} = 30 \text{ V}$, $I_E = 0$			0.1	μA
I_{EBO}	Emitter Cut-Off Current	$V_{EB} = 3 \text{ V}$, $I_C = 0$			0.1	μA
h_{FE}	DC Current Gain	$V_{CE} = 12.5 \text{ V}$, $I_C = 12.5 \text{ mA}$	20		200	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 15 \text{ mA}$, $I_B = 1.5 \text{ mA}$			0.2	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 15 \text{ mA}$, $I_B = 1.5 \text{ mA}$			1.5	V
C_{ob}	Output Capacitance	$V_{CB} = 10 \text{ V}$, $I_E = 0$, $f = 1 \text{ MHz}$	0.8		2	pF
C_{c-rbb}	Collector-Base Time Constant	$V_{CB} = 10 \text{ V}$, $I_C = 1 \text{ mA}$, $f = 30 \text{ MHz}$			25	ps
f_T	Current Gain Bandwidth Product	$V_{CE} = 12.5 \text{ V}$, $I_C = 12.5 \text{ mA}$	300			MHz
G_{PE}	Power Gain	$V_{CE} = 12.5 \text{ V}$, $I_C = 12.5 \text{ mA}$, $f = 45 \text{ MHz}$	28	33	36	dB

Typical Performance Characteristics

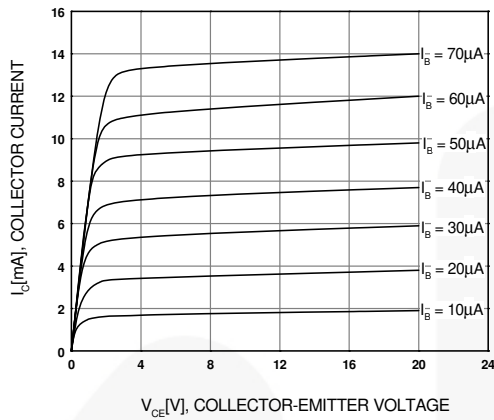


Figure 1. Static Characteristic

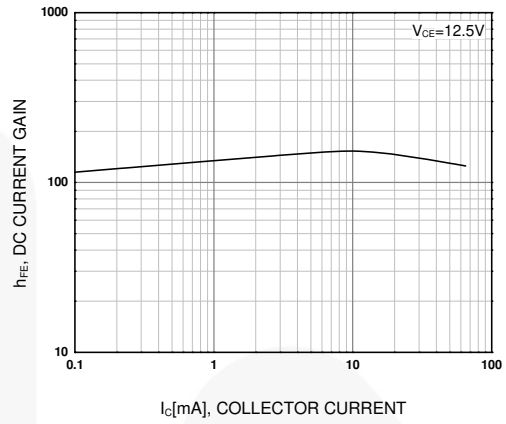


Figure 2. DC Current Gain

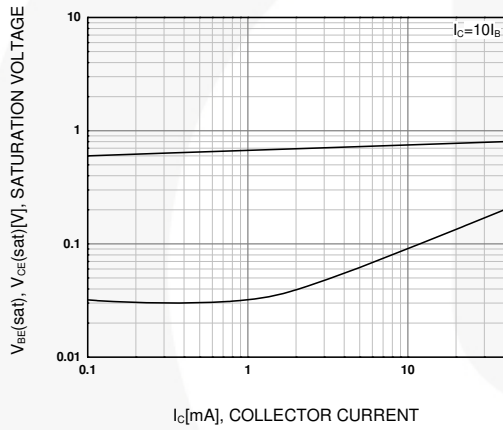


Figure 3. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

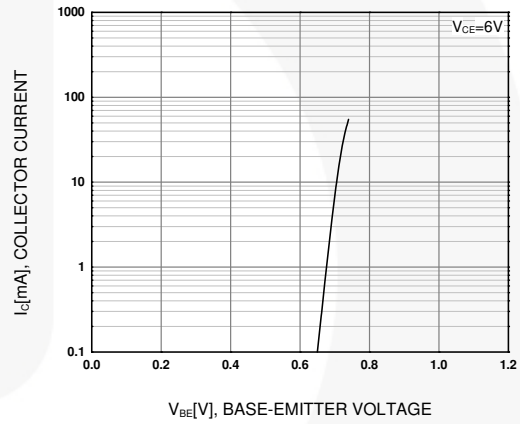


Figure 4. Base-Emitter On Voltage

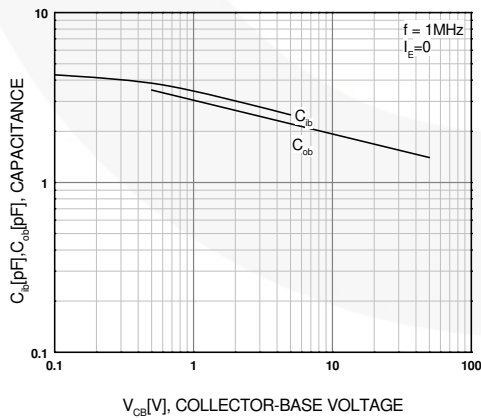


Figure 5. Collector Input Capacitance
Collector Output Capacitance

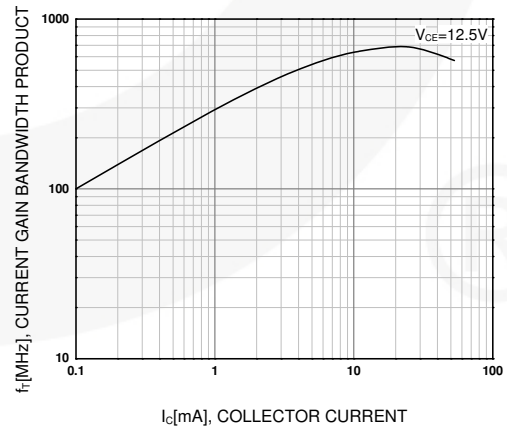
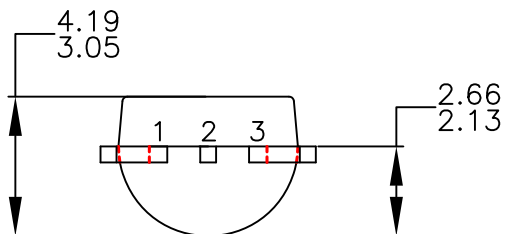
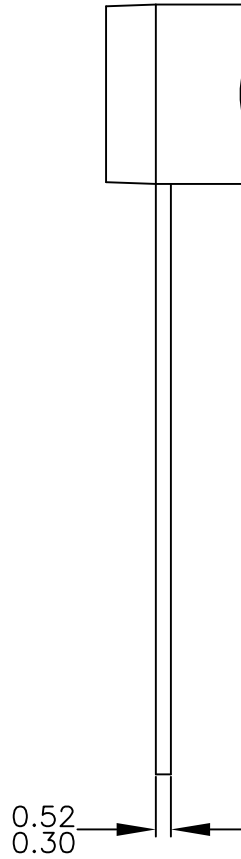
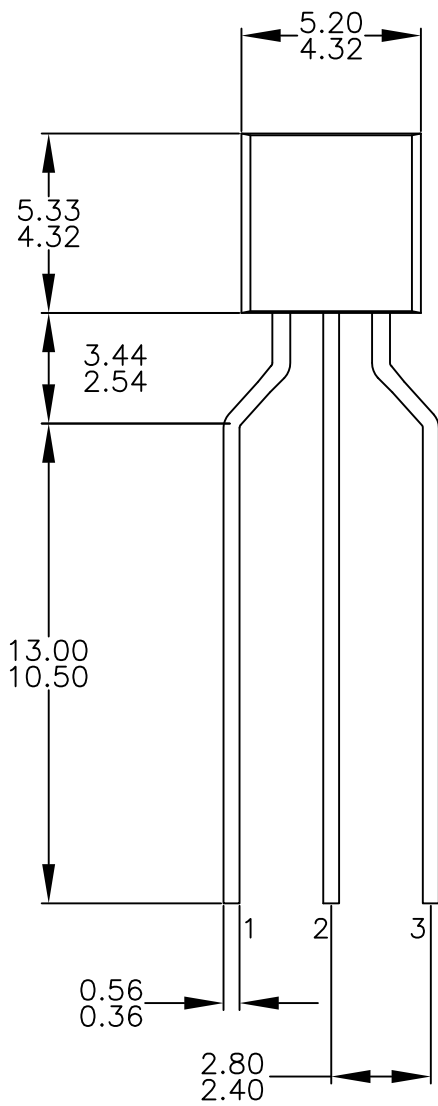


Figure 6. Current Gain Bandwidth Product



NOTES: UNLESS OTHERWISE SPECIFIED

- A. DRAWING CONFORMS TO JEDEC MS-013, VARIATION AC.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
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