



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<sup>(1)</sup>**

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

Symbol	Parameter	Value	Unit
$P_D$	Power Dissipation	300	mW
	Derate Above $25^\circ\text{C}$	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	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-Off Current	$V_{EB} = 3\ \text{V}$ , $I_C = 0$			0.1	$\mu\text{A}$
$h_{FE}$	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

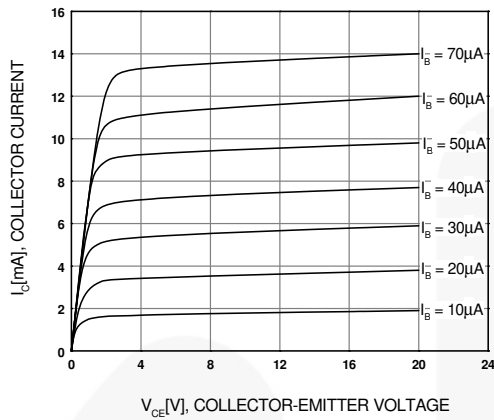


Figure 1. Static Characteristic

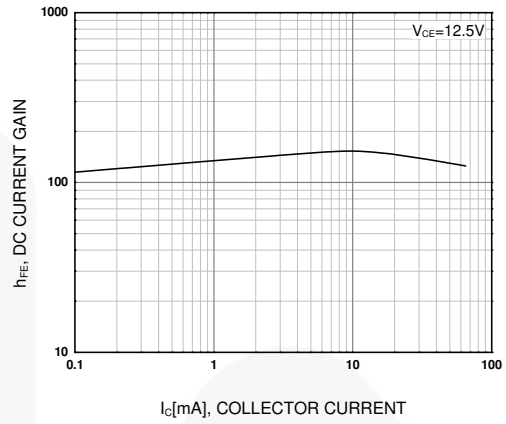


Figure 2. DC Current Gain

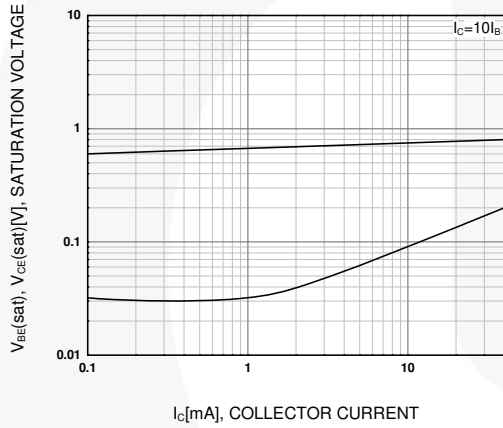


Figure 3. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

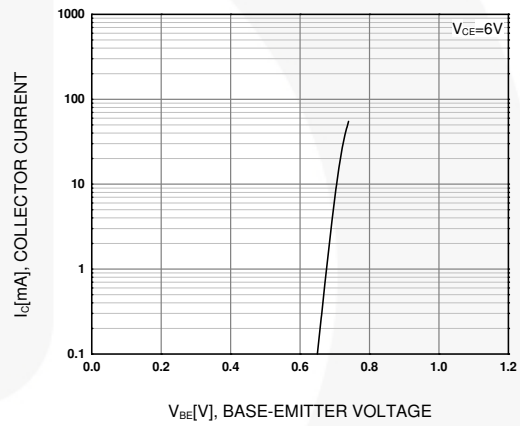


Figure 4. Base-Emitter On Voltage

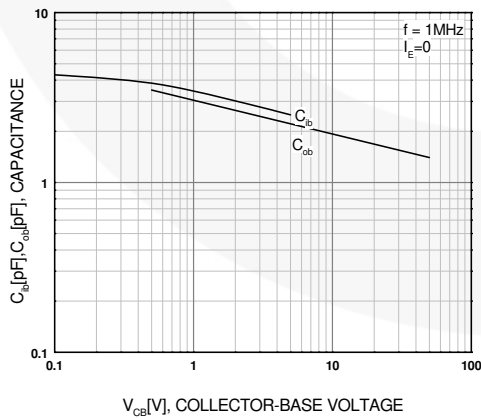


Figure 5. Collector Input Capacitance  
Collector Output Capacitance

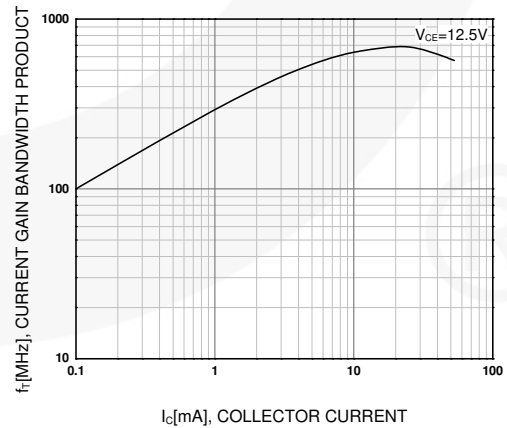
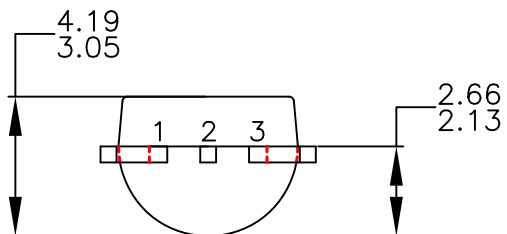
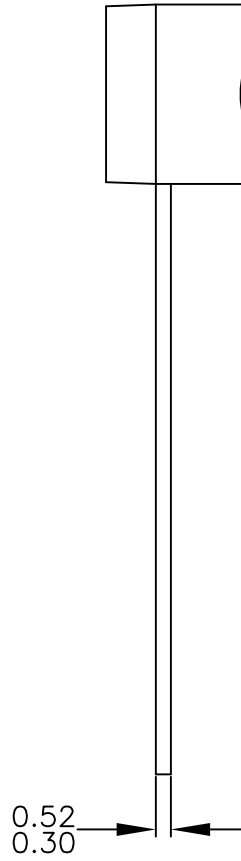
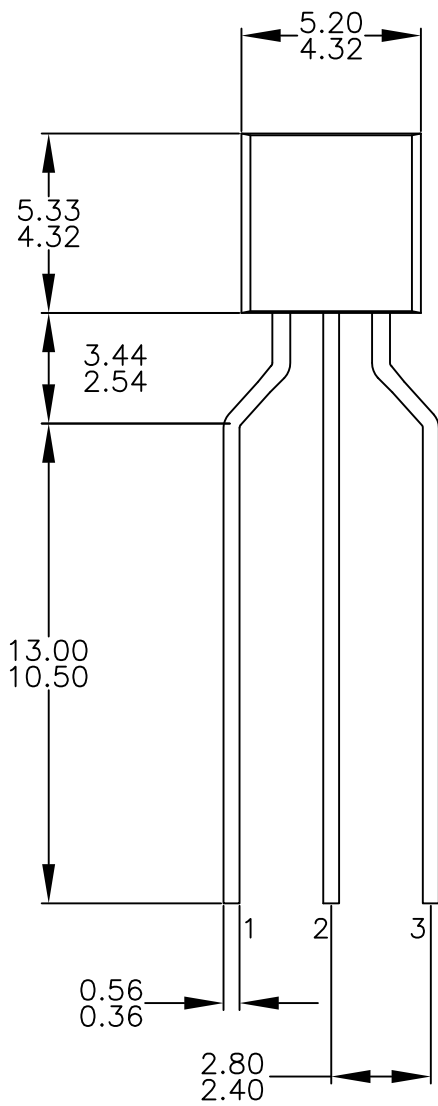


Figure 6. Current Gain Bandwidth Product








NOTES: UNLESS OTHERWISE SPECIFIED

- A. DRAWING CONFORMS TO JEDEC MS-013, VARIATION AC.
- B. ALL DIMENSIONS ARE IN MILLIMETERS.
- C. DRAWING CONFORMS TO ASME Y14.5M-2009.
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