

# NPN Epitaxial Silicon Transistor

## KSC2383



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### ABSOLUTE MAXIMUM RATINGS

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

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	160	V
$V_{CEO}$	Collector-Emitter Voltage	160	V
$V_{EBO}$	Emitter-Base Voltage	6	V
$I_C$	Collector Current	1	A
$I_B$	Base Current	0.5	A
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	-55 to +150	$^\circ\text{C}$

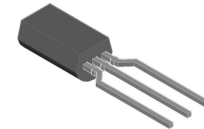
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### THERMAL CHARACTERISTICS

(Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.) (Note 1)

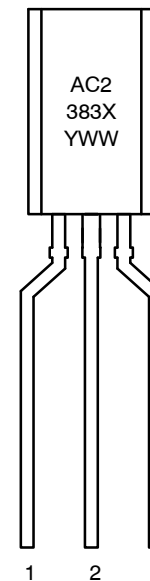
Symbol	Parameter	Value	Unit
$P_D$	Power Dissipation	900	mW
	Derate Above $25^\circ\text{C}$	7.2	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	138	$^\circ\text{C}/\text{W}$

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



TO-92 3 LF  
CASE 135AM

### MARKING DIAGRAM



1: Emitter  
2: Collector  
3: Base

A = Assembly Code  
C2383 = Device Code  
X = O / Y  
YWW = Date Code

### ORDERING INFORMATION

Device	Package	Shipping
KSC2383OTA	TO-92 3 LF (Pb-Free)	2000 / Fan-Fold
KSC2383YTA	TO-92 3 LF (Pb-Free)	2000 / Fan-Fold

**ELECTRICAL CHARACTERISTICS**

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector Cut-Off Current	$V_{CB} = 150\text{ V}, I_E = 0$	-	-	1	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-Off Current	$V_{EB} = 6\text{ V}, I_C = 0$	-	-	1	$\mu\text{A}$
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{ mA}, I_B = 0$	160	-	-	V
$h_{FE}$	DC Current Gain	$V_{CE} = 5\text{ V}, I_C = 200\text{ mA}$	60	-	320	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 500\text{ mA}, I_B = 50\text{ mA}$	-	-	1.5	V
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = 5\text{ V}, I_C = 5\text{ mA}$	0.45	-	0.75	V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 5\text{ V}, I_C = 200\text{ mA}$	20	100	-	MHz
$C_{ob}$	Output Capacitance	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	-	-	20	pF

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

**$h_{FE}$  CLASSIFICATION**

Classification	R	O	Y
$h_{FE}$	60 ~ 120	100 ~ 200	160 ~ 320

**TYPICAL PERFORMANCE CHARACTERISTICS**

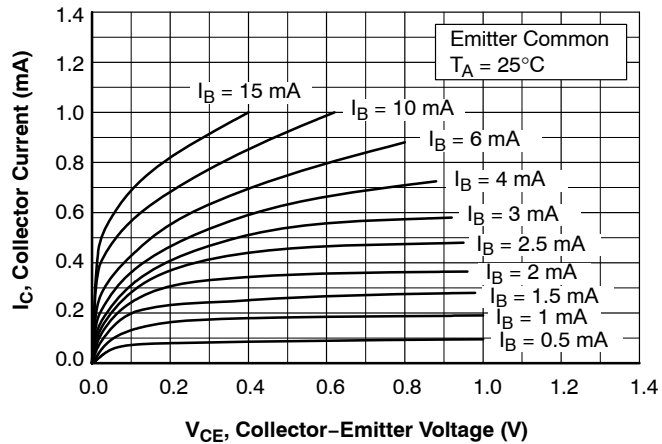


Figure 1. Static Characteristic

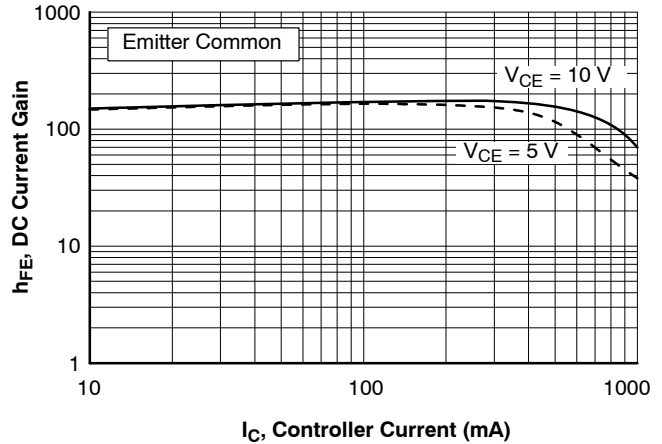


Figure 2. DC Current Gain

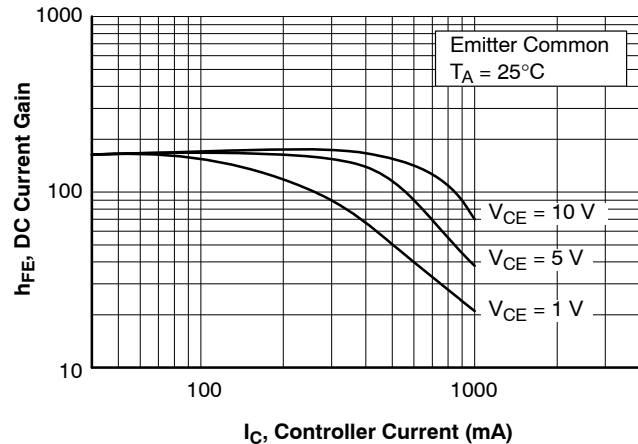


Figure 3. DC Current Gain

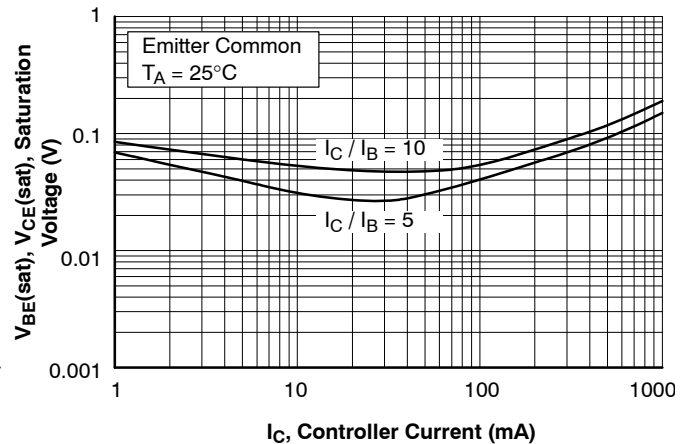


Figure 4. Collector-Emitter Saturation Voltage

TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

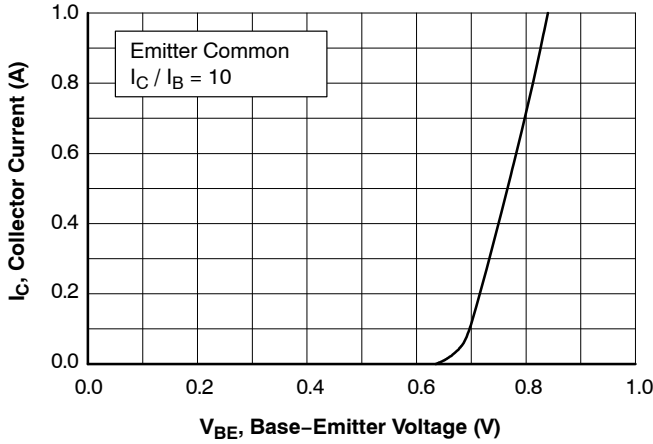


Figure 5. Base-Emitter On Voltage

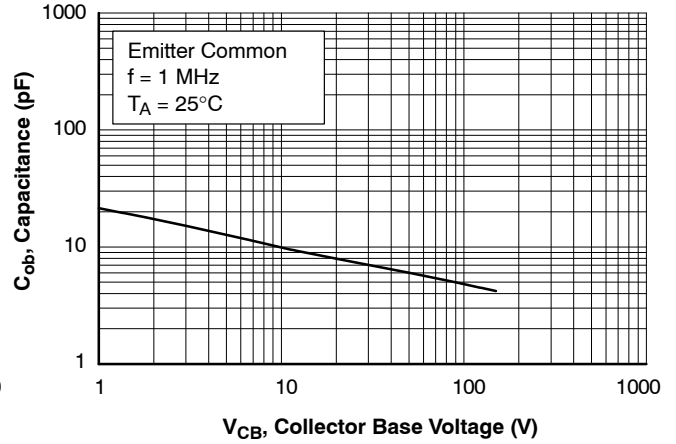


Figure 6. Collector Output Capacitance

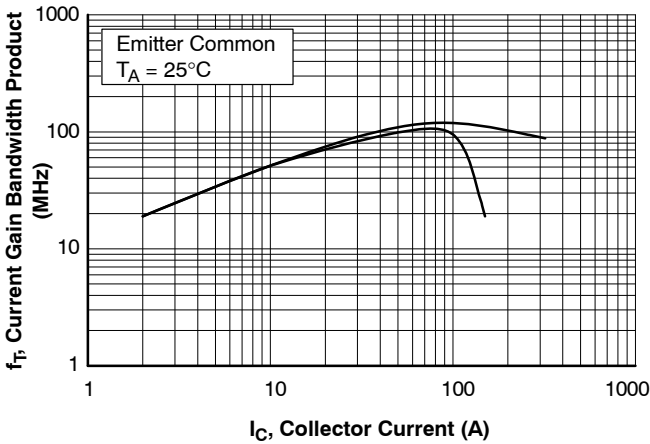


Figure 7. Current Gain Bandwidth Product

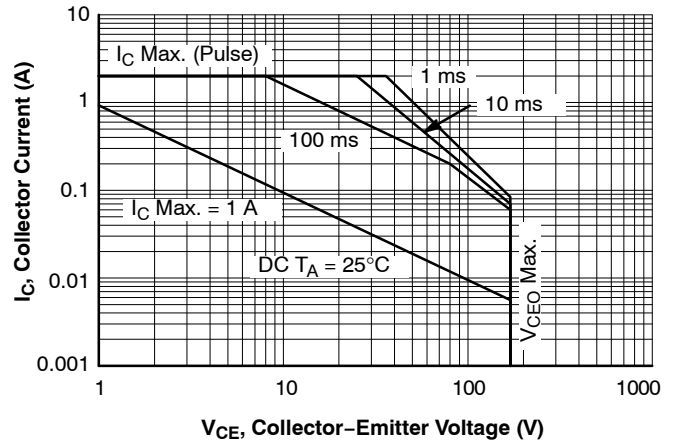
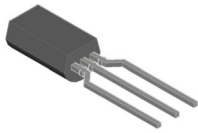


Figure 8. Safe Operating Area

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

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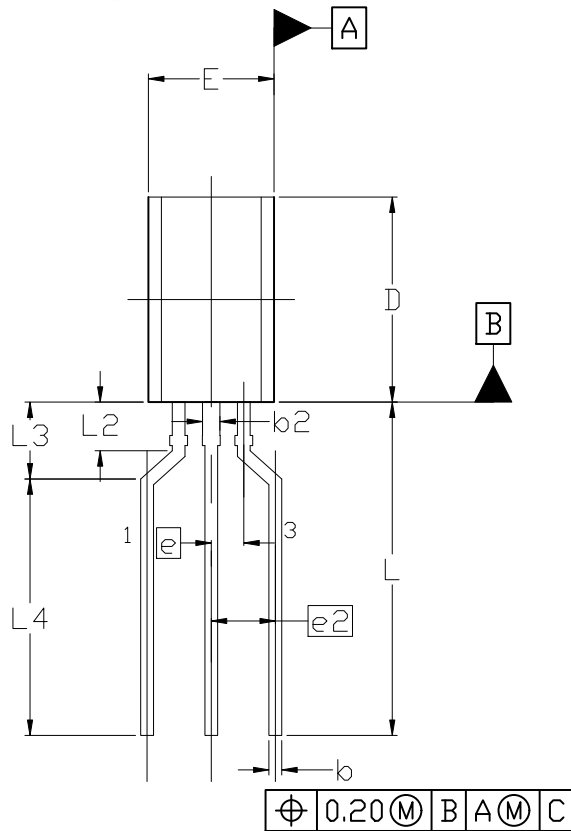
### TO-92 3 8.0x4.9 (LEADFORMED)

CASE 135AM  
ISSUE B

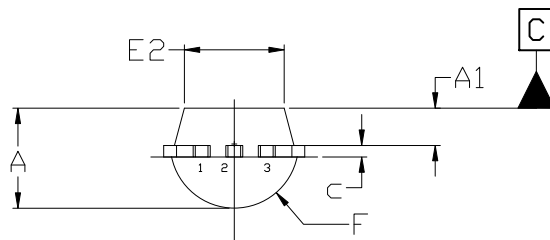
DATE 14 JAN 2021

#### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, GATE REMAINS AND TIE BAR PROTRUSIONS.
4. DIMENSION  $b$  AND  $b2$  DOES NOT INCLUDE DAMBAR PROTRUSION. DIMENSION  $b2$  LOCATED ABOVE THE DAMBAR PORTION OF MIDDLE LEAD.



TOP VIEW



END VIEW

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	3.70	3.90	4.10
A1	1.25	1.45	1.65
$b$	0.35	0.50	0.60
$b2$	0.62	---	0.78
$c$	0.35	0.45	0.55
D	7.80	8.00	8.20
E	4.70	4.90	5.10
E2	3.70	3.90	4.10
$e$	1.27 BSC		
$e2$	2.50 BSC		
F	2.45 REF		
L	13.00 REF		
L2	1.50	---	1.90
L3	2.60	---	3.40
L4	10.40 REF		

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