

NPN Epitaxial Silicon Transistor

KSC2383



ON Semiconductor®

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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 | $^\circ\text{C}$ |

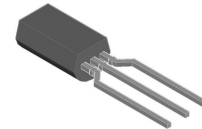
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS

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

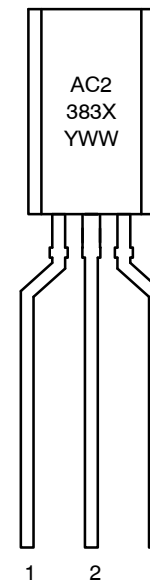
| Symbol | Parameter | Value | Unit |
|-----------------|---|-------|---------------------------|
| P_D | Power Dissipation | 900 | mW |
| | Derate Above 25°C | 7.2 | mW/ $^\circ\text{C}$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient | 138 | $^\circ\text{C}/\text{W}$ |

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 | μA |
| I_{EBO} | Emitter Cut-Off Current | $V_{EB} = 6\text{ V}, I_C = 0$ | - | - | 1 | μA |
| 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

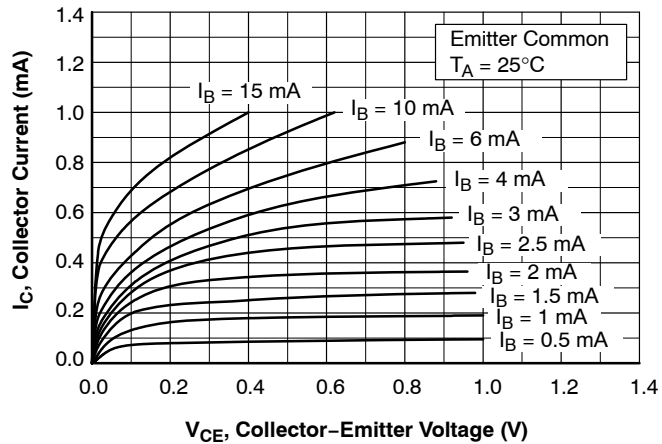


Figure 1. Static Characteristic

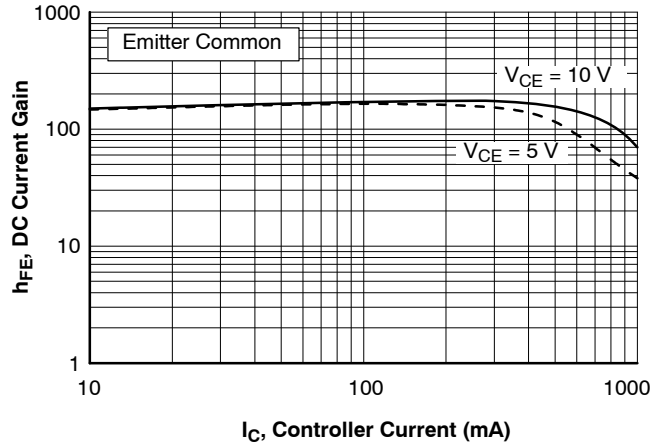


Figure 2. DC Current Gain

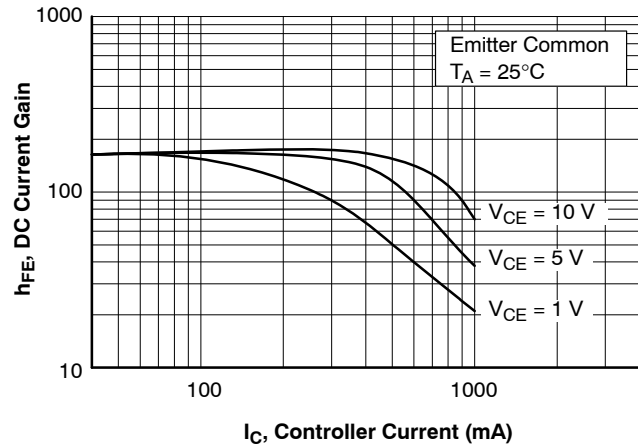


Figure 3. DC Current Gain

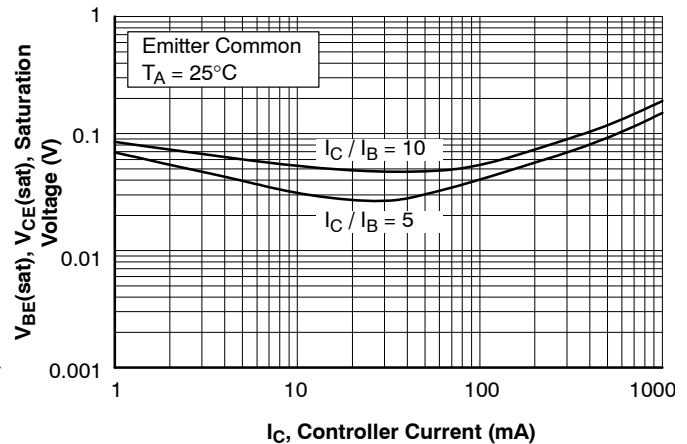


Figure 4. Collector-Emitter Saturation Voltage

TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

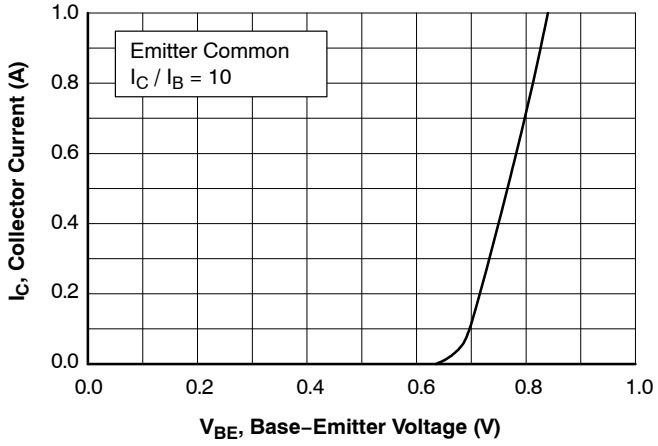


Figure 5. Base-Emitter On Voltage

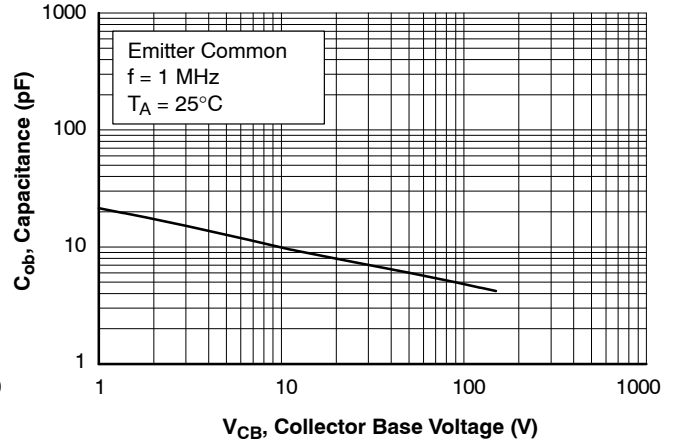


Figure 6. Collector Output Capacitance

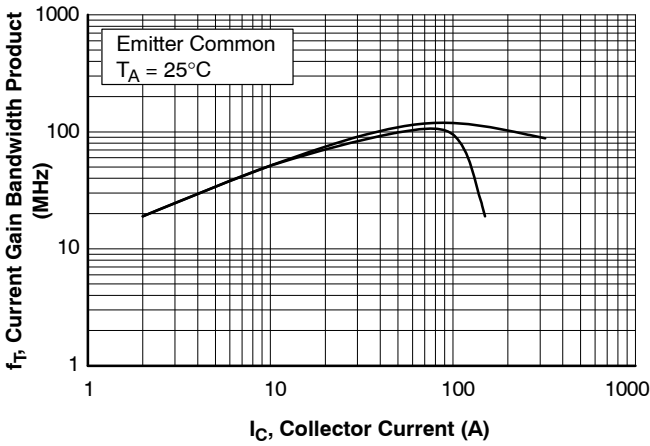


Figure 7. Current Gain Bandwidth Product

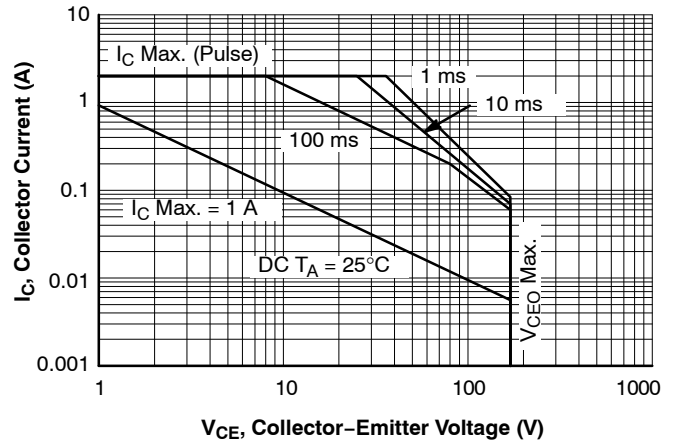
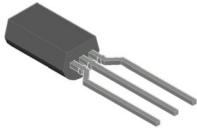


Figure 8. Safe Operating Area

MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

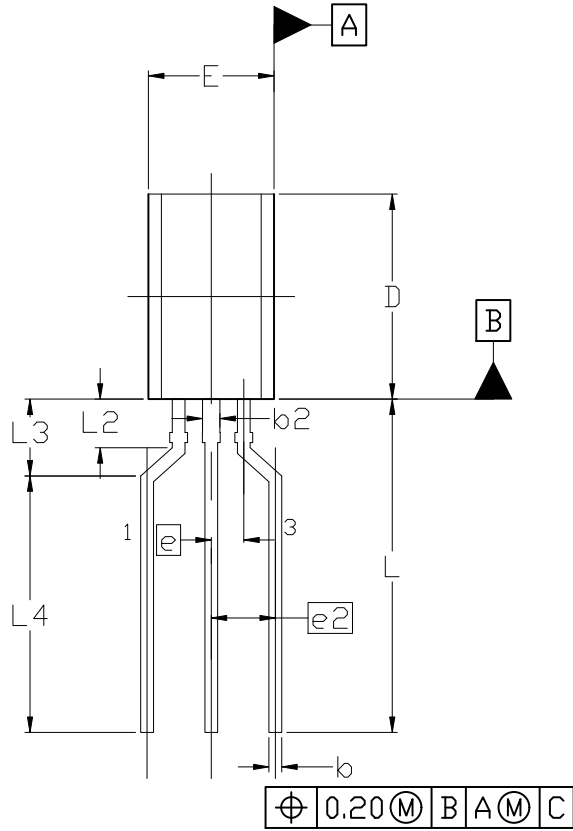
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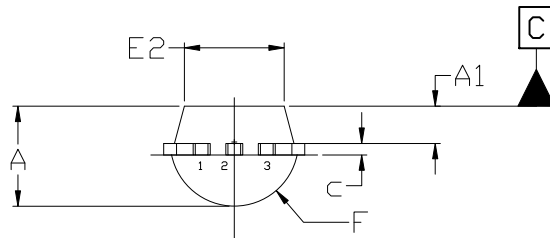
TO-92 3 8.0x4.9 (LEADFORMED)

CASE 135AM
ISSUE B

DATE 14 JAN 2021



TOP VIEW



END VIEW

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.

| 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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