

# NPN Epitaxial Silicon Transistor

## KSC2690A

### Features

- Complement to KSA1220A
- This is a Pb-Free Device

### Applications

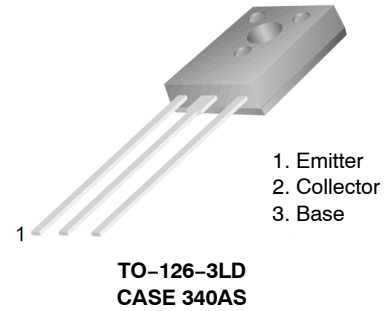
- Audio Frequency
- High Frequency Power Amplifier

### ABSOLUTE MAXIMUM RATINGS ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

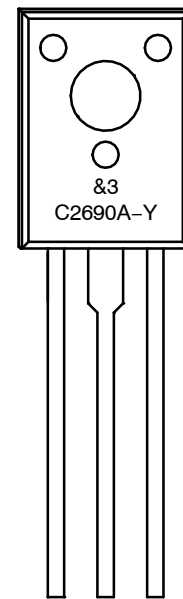
| Symbol    | Parameter                                                                   | Ratings   | Units            |
|-----------|-----------------------------------------------------------------------------|-----------|------------------|
| $V_{CBO}$ | Collector-Base Voltage                                                      | 160       | V                |
| $V_{CEO}$ | Collector-Emitter Voltage                                                   | 160       | V                |
| $V_{EBO}$ | Emitter-Base Voltage                                                        | 5         | V                |
| $I_C$     | Collector Current (DC)                                                      | 1.2       | A                |
| $I_{CP}$  | Collector Current (Pulse) *                                                 | 2.5       | A                |
| $I_B$     | Base Current (DC)                                                           | 0.3       | A                |
| $P_C$     | Collector Dissipation, $T_A = 25^\circ\text{C}$<br>$T_C = 25^\circ\text{C}$ | 1.2<br>20 | W                |
| $T_J$     | Junction Temperature                                                        | 150       | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature                                                         | -55 ~ 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.

\*PW ≤ 10 ms, Duty Cycle ≤ 50%



### MARKING DIAGRAM



&3 = 3-Digit Date Code  
C2690A-Y = Specific Device Code

### ORDERING INFORMATION

| Device       | Package              | Shipping              |
|--------------|----------------------|-----------------------|
| KSC2690AYS   | TO-126-3LD (Pb-Free) | 2000 Units / Bulk Bag |
| KSC2690AYSTU | TO-126-3LD (Pb-Free) | 1920 Units / Tube     |

# KSC2690A

## ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted)

| Symbol                               | Characteristic                        | Test Condition                                                                                | Min      | Typ        | Max | Unit |
|--------------------------------------|---------------------------------------|-----------------------------------------------------------------------------------------------|----------|------------|-----|------|
| I <sub>CBO</sub>                     | Collector Cut-off Current             | V <sub>CB</sub> = 120 V, I <sub>E</sub> = 0                                                   |          |            | 1   | μA   |
| I <sub>EBO</sub>                     | Emitter Cut-off Current               | V <sub>EB</sub> = 3 V, I <sub>C</sub> = 0                                                     |          |            | 1   | μA   |
| h <sub>FE1</sub><br>h <sub>FE2</sub> | DC Current Gain*                      | V <sub>CE</sub> = 5 V, I <sub>C</sub> = 5 mA<br>V <sub>CE</sub> = 5 V, I <sub>C</sub> = 0.3 A | 35<br>60 | 105<br>140 | 320 |      |
| V <sub>CE(sat)</sub>                 | Collector-Emitter Saturation Voltage* | I <sub>C</sub> = 1 A, I <sub>B</sub> = 0.2 A                                                  |          | 0.4        | 0.7 | V    |
| V <sub>BE(sat)</sub>                 | Base-Emitter Saturation Voltage*      | I <sub>C</sub> = 1 A, I <sub>B</sub> = 0.2 A                                                  |          | 1          | 1.3 | V    |
| f <sub>T</sub>                       | Current Gain Bandwidth Product        | V <sub>CE</sub> = 5 V, I <sub>C</sub> = 0.2 A                                                 |          | 155        |     | MHz  |
| C <sub>ob</sub>                      | Output Capacitance                    | V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0, f = 1 MHz                                         |          | 19         |     | 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.

\*Pulse Test: PW ≤ 350 μs, Duty Cycle ≤ 2% Pulsed

## h<sub>FE</sub> CLASSIFICATION

| Classification   | R        | O         | Y         |
|------------------|----------|-----------|-----------|
| h <sub>FE2</sub> | 60 ~ 120 | 100 ~ 200 | 160 ~ 320 |

TYPICAL CHARACTERISTICS

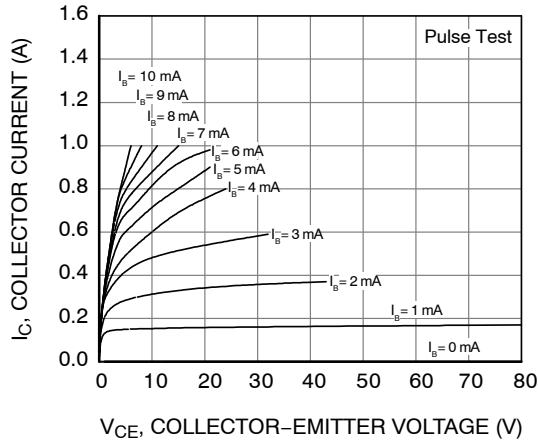


Figure 1. Static Characteristic

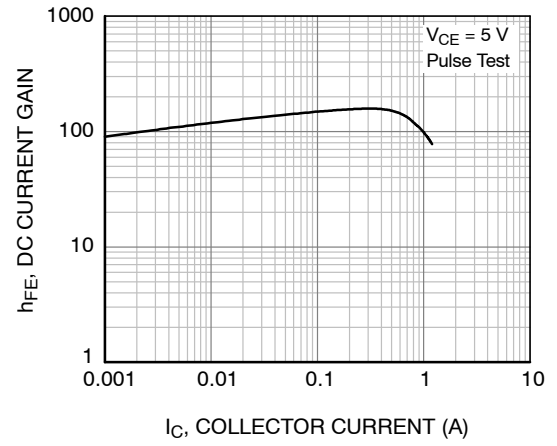


Figure 2. DC Current Gain

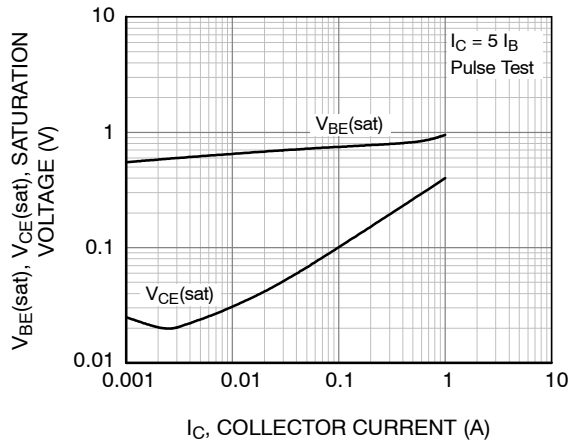


Figure 3. Collector-Emitter Saturation Voltage  
Base-Emitter Saturation Voltage

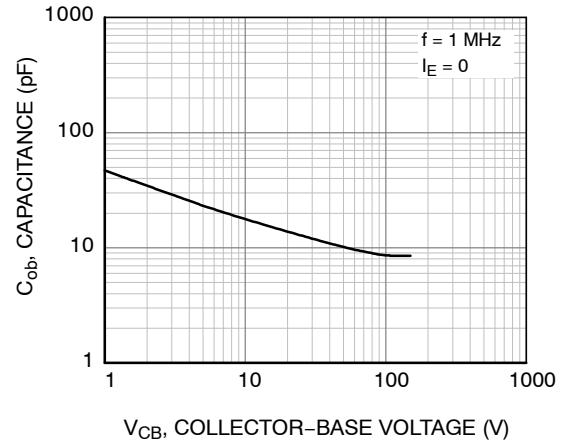


Figure 4. Collector Output Capacitance

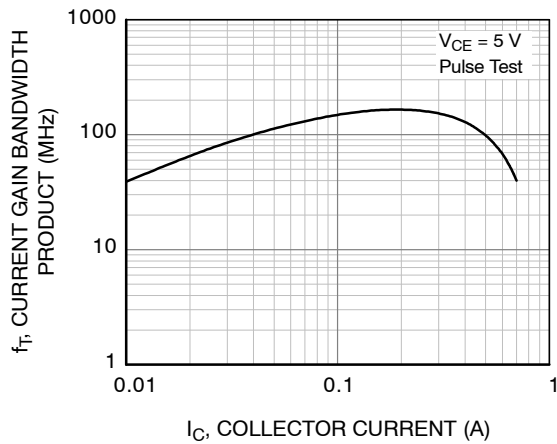


Figure 5. Current Gain Bandwidth Product

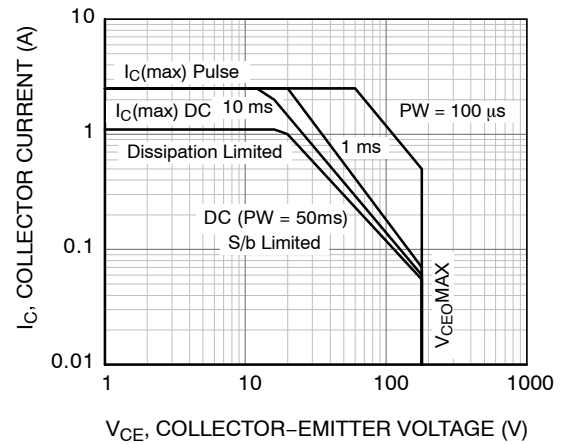


Figure 6. Safe Operating Area

TYPICAL CHARACTERISTICS (Continued)

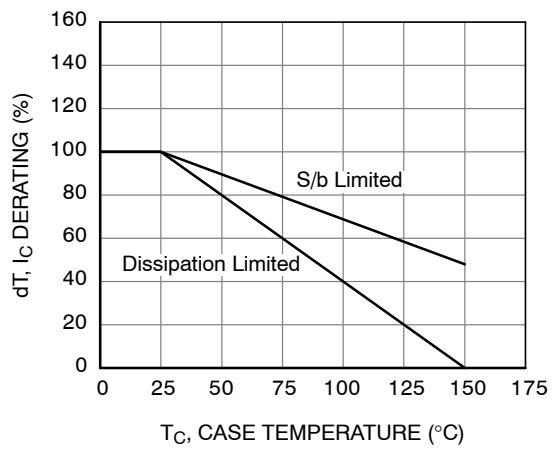


Figure 7. Derating Curve of Safe Operating Areas

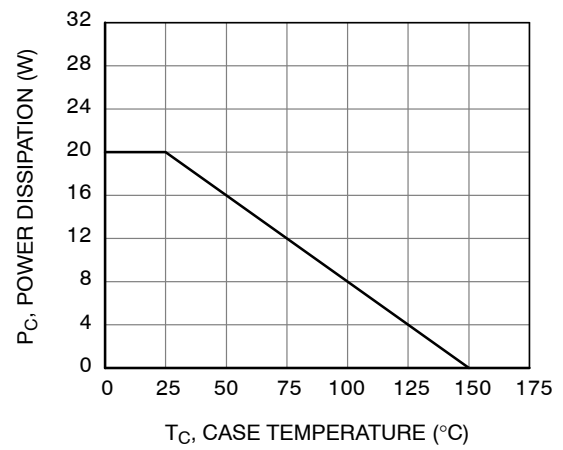
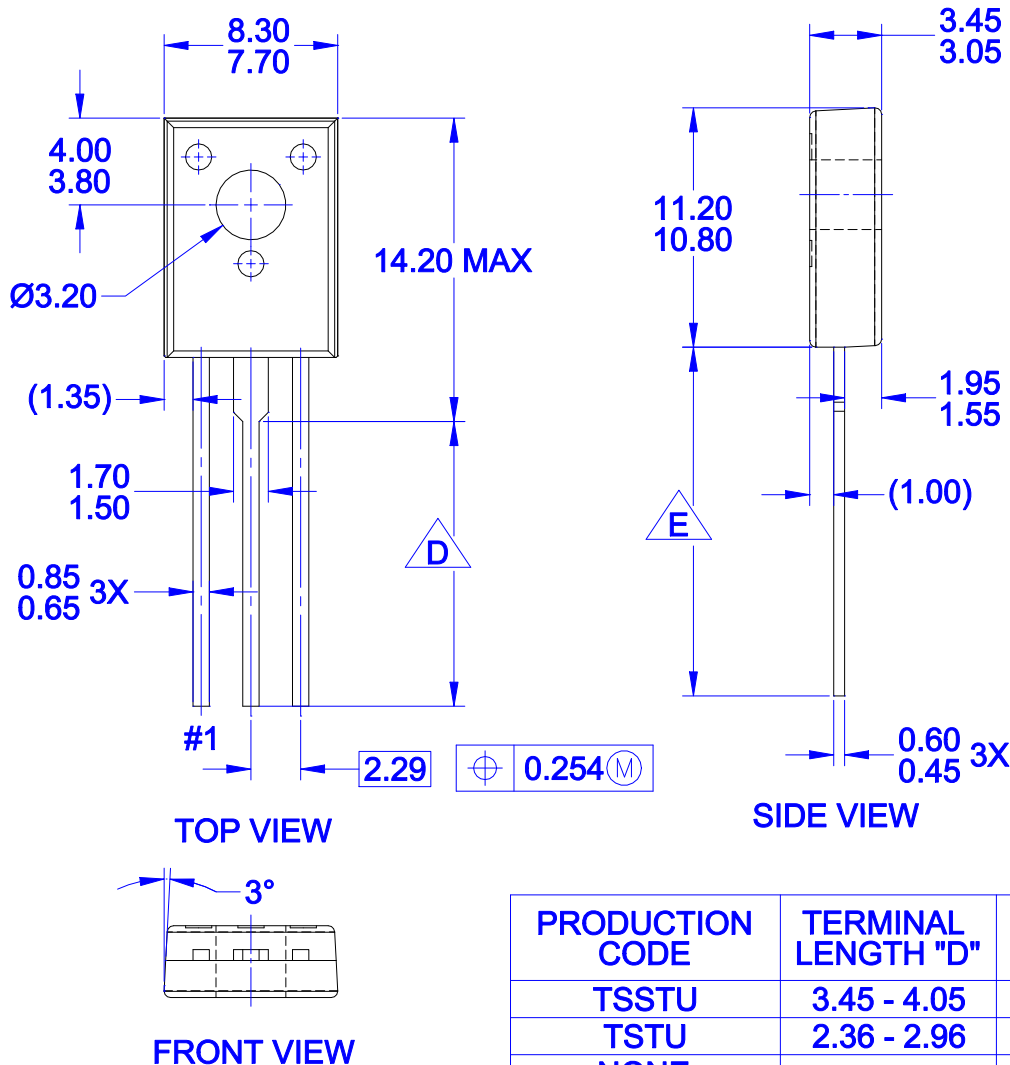


Figure 8. Power Derating

TO-126-3LD  
CASE 340AS  
ISSUE O

DATE 30 SEP 2016



**NOTES:**

- A. NO INDUSTRY STANDARD APPLIES TO THIS PACKAGE
- B. ALL DIMENSIONS ARE IN MILLIMETERS
- C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR PROTRUSIONS

**D** FOR TERMINAL LENGTH "D", REFER TO TABLE

**E** FOR TERMINAL LENGTH "E", REFER TO TABLE

| PRODUCTION CODE   | TERMINAL LENGTH "D" | TERMINAL LENGTH "E" |
|-------------------|---------------------|---------------------|
| TSSTU             | 3.45 - 4.05         | 6.45 - 7.45         |
| TSTU              | 2.36 - 2.96         | 5.36 - 6.36         |
| NONE (STD LENGTH) | 12.76 - 13.36       | 15.76 - 16.76       |

|                         |                    |                                                                                                                                                                                     |
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