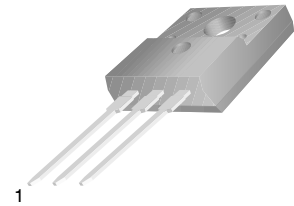


NPN Epitaxial Silicon Transistor

Low Frequency Power Amplifier

KSD2012

- Complementary to KSB1366
- This is a Pb-Free Device



1. Base
2. Collector
3. Emitter

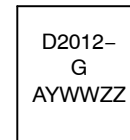
TO-220 Fullpack
CASE 221AT

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C unless otherwise noted)

| Symbol | Parameter | Value | Unit |
|------------------|---|-----------|------|
| V _{CB0} | Collector-Base Voltage | 60 | V |
| V _{CEO} | Collector-Emitter Voltage | 60 | V |
| V _{EBO} | Emitter-Base Voltage | 7 | V |
| I _C | Collector Current | 3 | A |
| I _B | Base Current | 0.3 | A |
| P _C | Collector Power Dissipation (T _C = 25°C) | 25 | W |
| T _J | Junction Temperature | 150 | °C |
| T _{stg} | Storage Temperature | -55 ~ 150 | °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.

MARKING DIAGRAM



- D2012 = Specific Device Code
 G = h_{FE} Grade
 A = Site Code
 YWW = Date Code (Year & Week)
 ZZ = Assembly Lot Code

ORDERING INFORMATION

| Device | Package | Shipping [†] |
|------------|---------------------------|-----------------------|
| KSD2012GTU | TO-220 Fullpack (Pb-Free) | 1000 Units / Tube |

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

| Symbol | Parameter | Test Condition | Value | | | Unit |
|--------------------------------------|--------------------------------------|--|-----------|-----|-----|------|
| | | | Min | Typ | Max | |
| BV _{CEO} | Collector-Emitter Breakdown Voltage | I _C = 50 mA, I _B = 0 | 60 | - | - | V |
| I _{CBO} | Collector Cut-off Current | V _{CB} = 60 V, I _E = 0 | - | - | 100 | μA |
| I _{EBO} | Emitter Cut-off Current | V _{EB} = 7 V, I _C = 0 | - | - | 10 | μA |
| h _{FE1} h _{FE2} | DC Current Gain | V _{CE} = 5 V, I _C = 0.5 A V _{CE} = 5 V, I _C = 3 A | 100 20 | - | 320 | - |
| V _{CE(sat)} | Collector-Emitter Saturation Voltage | I _C = 2 A, I _B = 0.2 A | - | 0.4 | 1 | V |
| V _{BE(on)} | Base-Emitter ON Voltage | V _{CE} = 5 V, I _C = 0.5 A | - | 0.7 | 1 | V |
| f _T | Current Gain Bandwidth Product | V _{CE} = 5 V, I _C = 0.5 A | - | 3 | - | MHz |

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 | Y | G |
|------------------|-----------|-----------|
| h _{FE1} | 100 ~ 200 | 150 ~ 320 |

TYPICAL CHARACTERISTICS

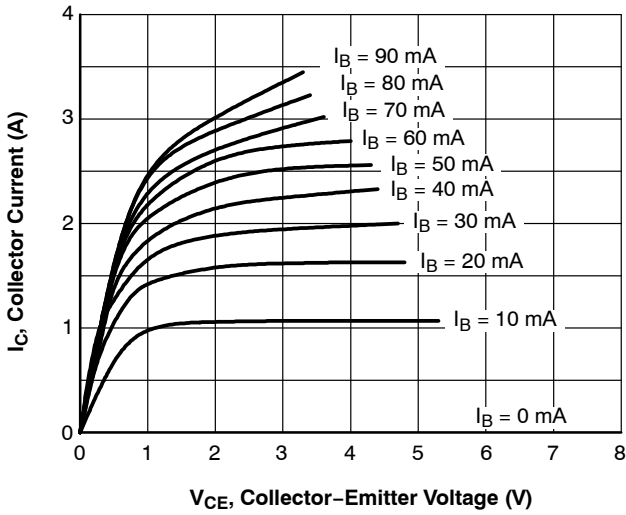


Figure 1. Static Characteristic

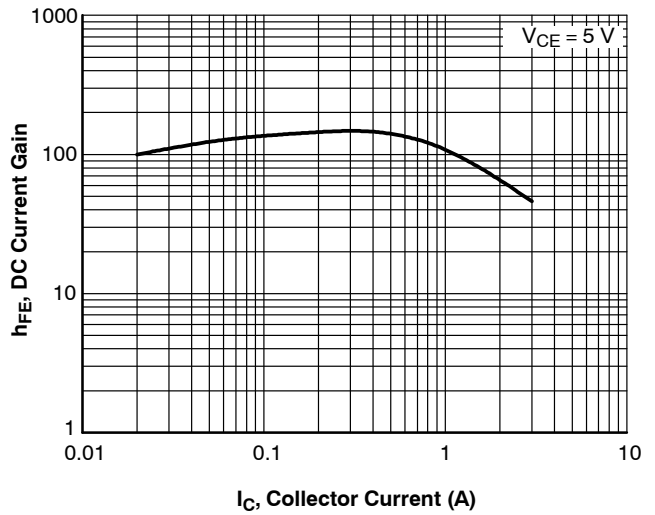


Figure 2. DC Current Gain

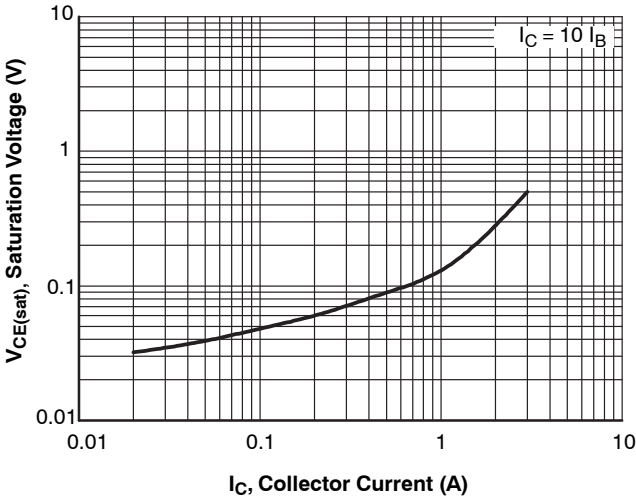


Figure 3. Collector-Emitter Saturation Voltage

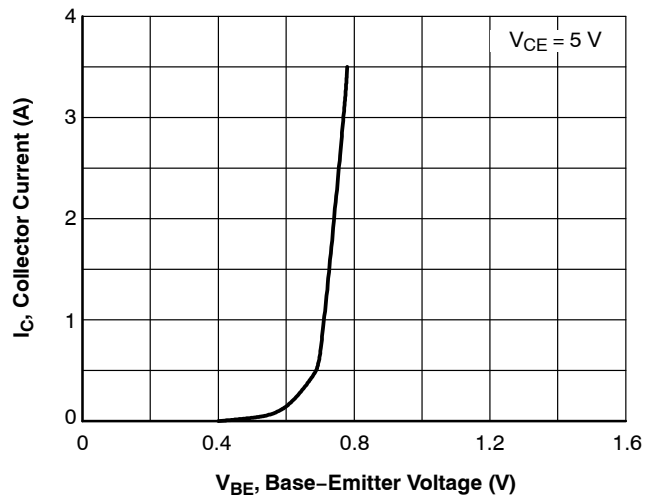


Figure 4. Base-Emitter On Voltage

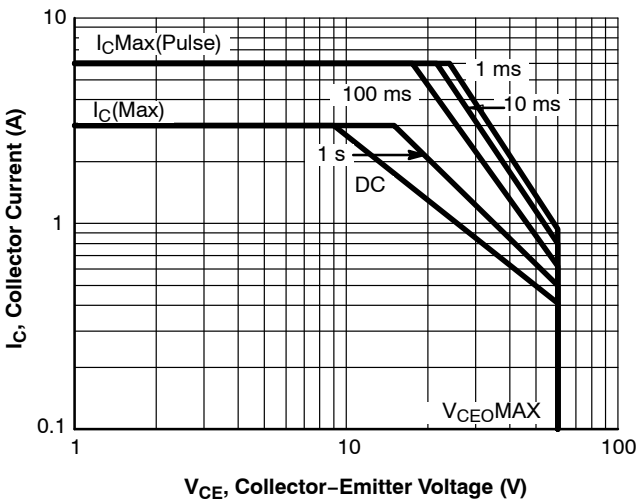


Figure 5. Safe Operating Area

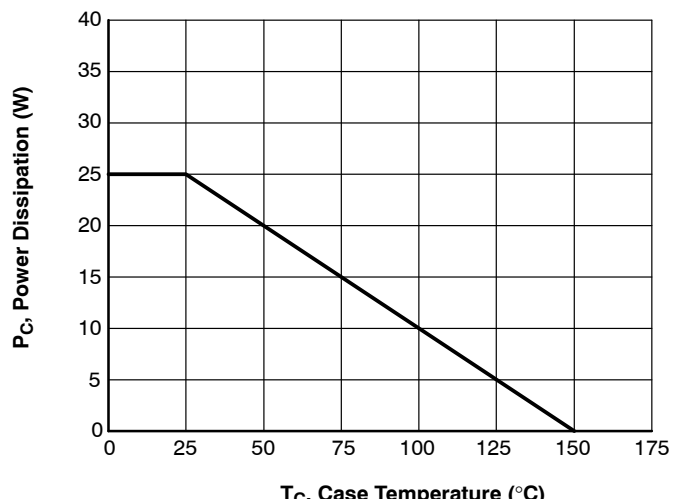


Figure 6. Power Derating

MECHANICAL CASE OUTLINE

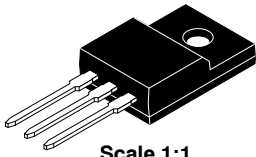
PACKAGE DIMENSIONS

ON Semiconductor®

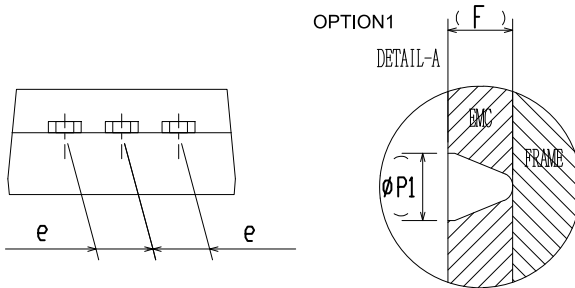
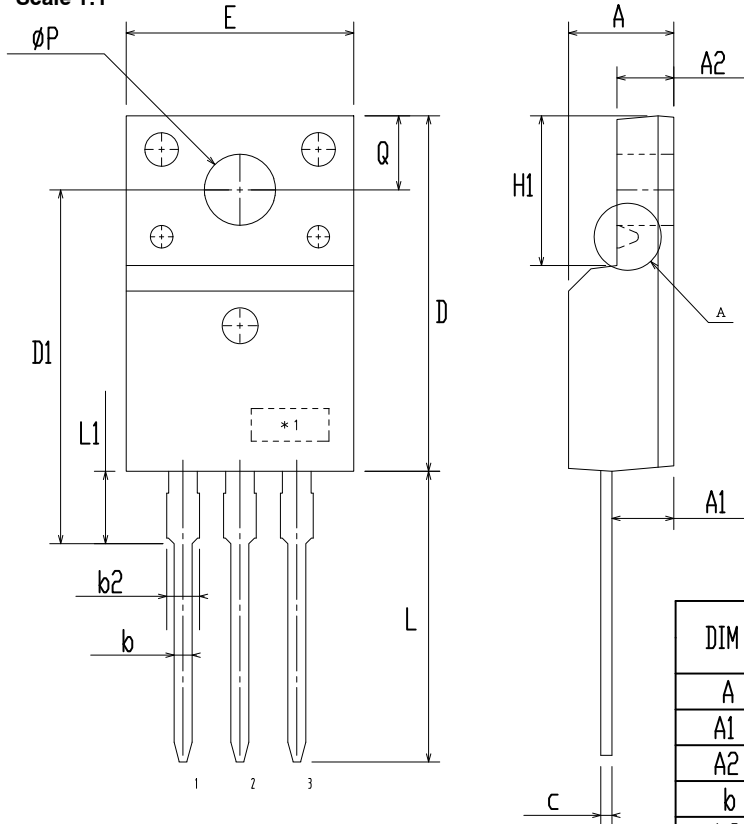


TO-220 Fullpack, 3-Lead / TO-220F-3SG CASE 221AT ISSUE B

DATE 19 JAN 2021



Scale 1:1



| DIM | MILLIMETERS | | |
|--------|-------------|-------|-------|
| | MIN | NOM | MAX |
| A | 4.50 | 4.70 | 4.90 |
| A1 | 2.56 | 2.76 | 2.96 |
| A2 | 2.34 | 2.54 | 2.74 |
| b | 0.70 | 0.80 | 0.90 |
| b2 | ~ | ~ | 1.47 |
| c | 0.45 | 0.50 | 0.60 |
| D | 15.67 | 15.87 | 16.07 |
| D1 | 15.60 | 15.80 | 16.00 |
| E | 9.96 | 10.16 | 10.36 |
| e | 2.34 | 2.54 | 2.74 |
| F | ~ | 0.84 | ~ |
| H1 | 6.48 | 6.68 | 6.88 |
| L | 12.78 | 12.98 | 13.18 |
| L1 | 3.03 | 3.23 | 3.43 |
| phi P | 2.98 | 3.18 | 3.38 |
| phi P1 | ~ | 1.00 | ~ |
| Q | 3.20 | 3.30 | 3.40 |

NOTES:

- A. DIMENSION AND TOLERANCE AS ASME Y14.5-2009
- B. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUCTIONS.
- C. OPTION 1 - WITH SUPPORT PIN HOLE
OPTION 2 - NO SUPPORT PIN HOLE

| | | |
|-------------------------|--|---|
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| DESCRIPTION: | TO-220 FULLPACK, 3-LEAD / TO-220F-3SG | PAGE 1 OF 1 |

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