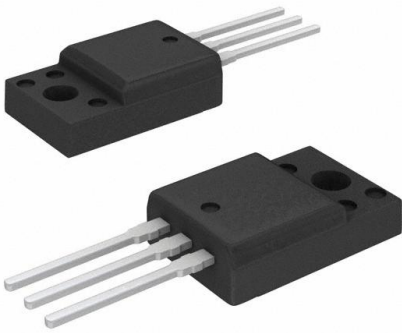


KSD2012YTU Datasheet

www.digi-electronics.com



<https://www.DiGi-Electronics.com>

| | |
|------------------------------|--|
| DiGi Electronics Part Number | KSD2012YTU-DG |
| Manufacturer | onsemi |
| Manufacturer Product Number | KSD2012YTU |
| Description | TRANS NPN 60V 3A TO220F-3 |
| Detailed Description | Bipolar (BJT) Transistor NPN 60 V 3 A 3MHz 25 W Through Hole TO-220F-3 |



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.

Purchase and inquiry

Manufacturer Product Number:

KSD2012YTU

Series:

-

Transistor Type:

NPN

Voltage - Collector Emitter Breakdown (Max):

60 V

Current - Collector Cutoff (Max):

100 μ A (ICBO)

Power - Max:

25 W

Operating Temperature:

150°C (TJ)

Package / Case:

TO-220-3 Full Pack

Base Product Number:

KSD2012

Manufacturer:

onsemi

Product Status:

Obsolete

Current - Collector (Ic) (Max):

3 A

Vce Saturation (Max) @ Ib, Ic:

1V @ 200mA, 2A

DC Current Gain (hFE) (Min) @ Ic, Vce:

100 @ 500mA, 5V

Frequency - Transition:

3MHz

Mounting Type:

Through Hole

Supplier Device Package:

TO-220F-3

Environmental & Export classification

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

REACH Status:

REACH Unaffected

HTSUS:

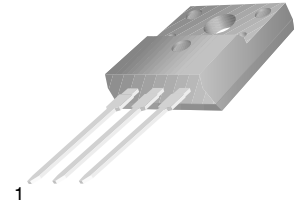
8541.29.0095

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

| Symbol | Parameter | Value | Unit |
|-----------|--|-----------|------------------|
| V_{CBO} | 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 ($T_C = 25^\circ\text{C}$) | 25 | 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.

MARKING DIAGRAM

| |
|-----------------------|
| D2012- G AYWWZZ |
|-----------------------|

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

| Symbol | Parameter | Test Condition | Value | | | Unit |
|------------------------|--------------------------------------|--|-----------|-----|-----|---------------|
| | | | Min | Typ | Max | |
| BV_{CEO} | Collector-Emitter Breakdown Voltage | $I_C = 50\text{ mA}$, $I_B = 0$ | 60 | - | - | V |
| I_{CBO} | Collector Cut-off Current | $V_{CB} = 60\text{ V}$, $I_E = 0$ | - | - | 100 | μA |
| I_{EBO} | Emitter Cut-off Current | $V_{EB} = 7\text{ V}$, $I_C = 0$ | - | - | 10 | μA |
| h_{FE1} h_{FE2} | DC Current Gain | $V_{CE} = 5\text{ V}$, $I_C = 0.5\text{ A}$ $V_{CE} = 5\text{ V}$, $I_C = 3\text{ A}$ | 100 20 | - | 320 | - |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 2\text{ A}$, $I_B = 0.2\text{ A}$ | - | 0.4 | 1 | V |
| $V_{BE(on)}$ | Base-Emitter ON Voltage | $V_{CE} = 5\text{ V}$, $I_C = 0.5\text{ A}$ | - | 0.7 | 1 | V |
| f_T | Current Gain Bandwidth Product | $V_{CE} = 5\text{ V}$, $I_C = 0.5\text{ A}$ | - | 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 |

KSD2012

TYPICAL CHARACTERISTICS

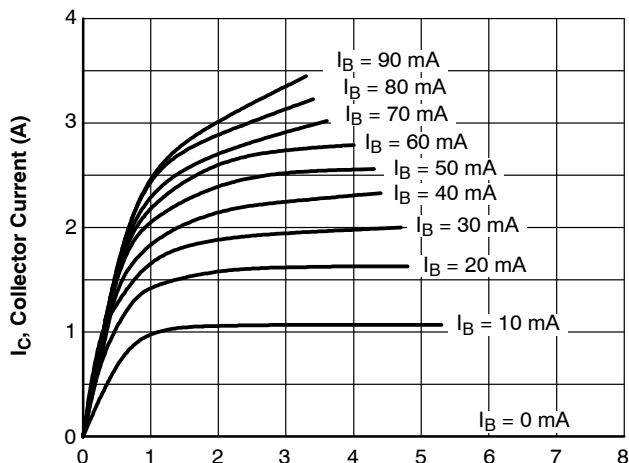


Figure 1. Static Characteristic

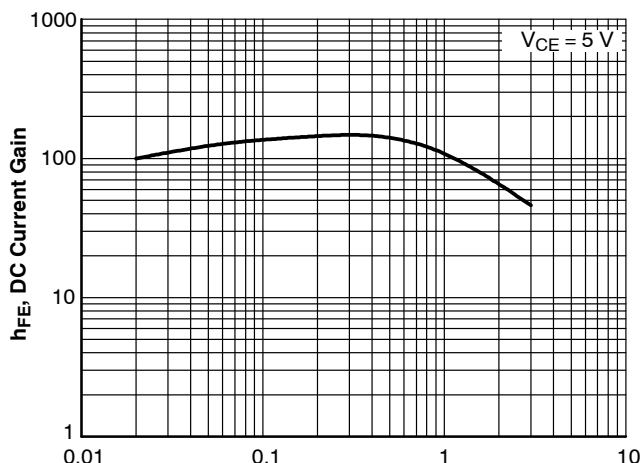


Figure 2. DC Current Gain

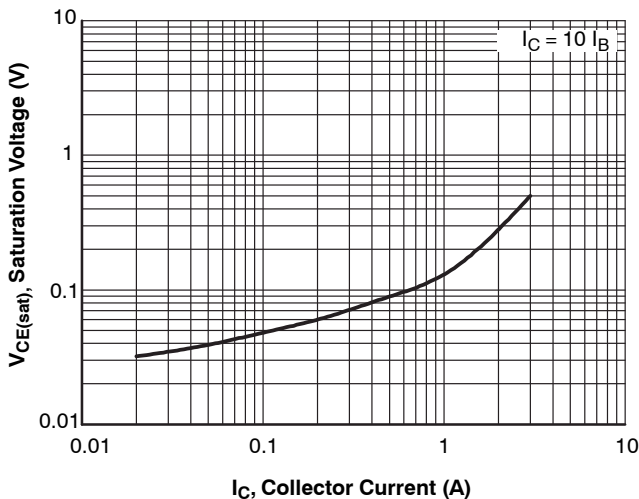


Figure 3. Collector-Emitter Saturation Voltage

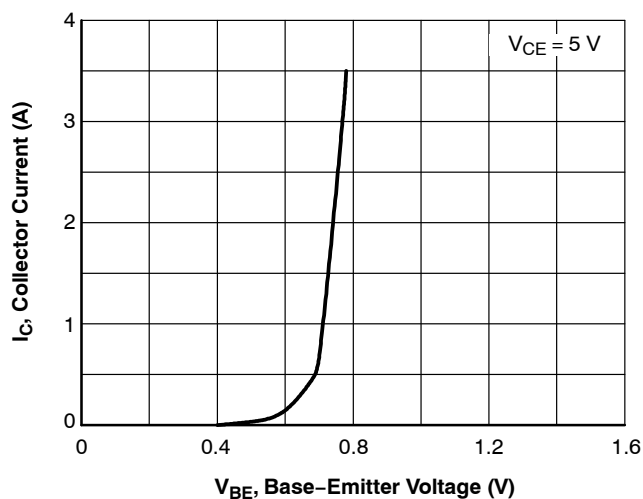


Figure 4. Base-Emitter On Voltage

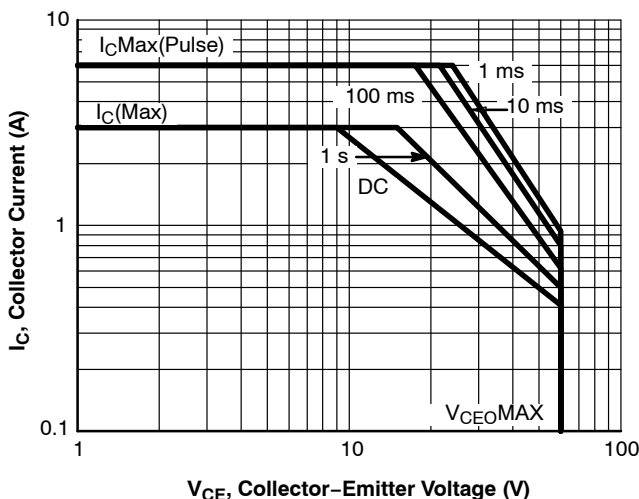


Figure 5. Safe Operating Area

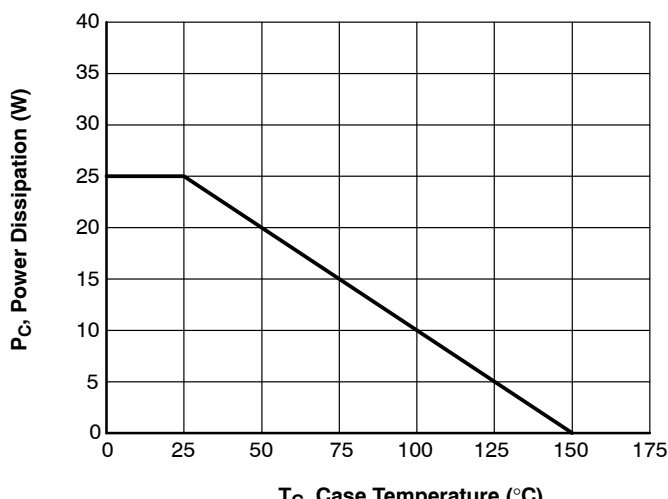
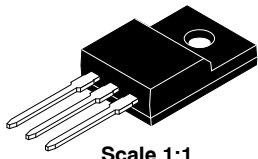


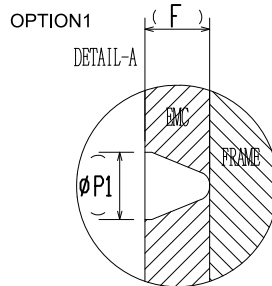
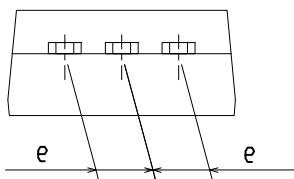
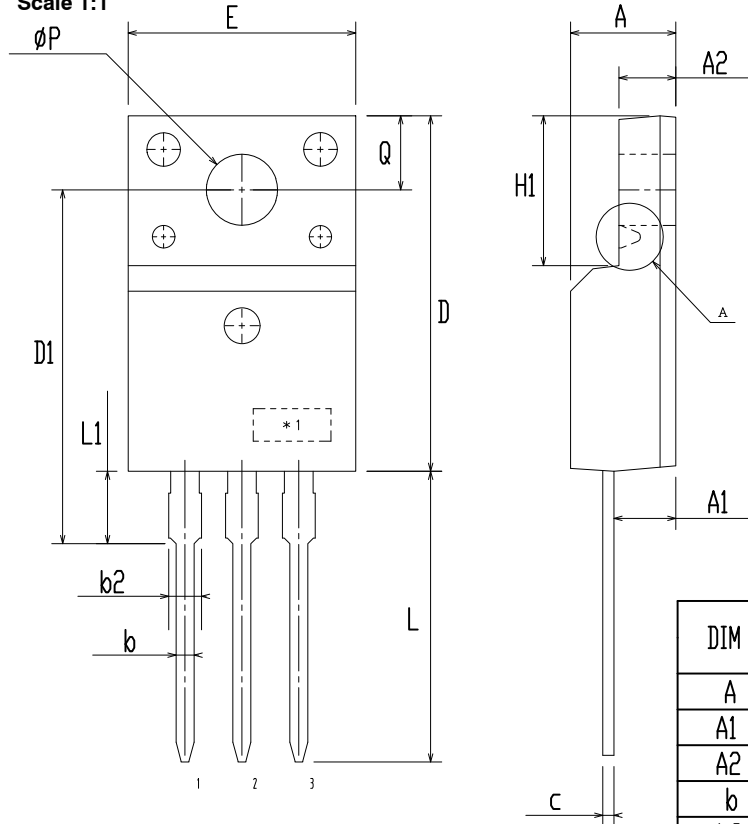
Figure 6. Power Derating

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 |
| Ø P | 2.98 | 3.18 | 3.38 |
| Ø 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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