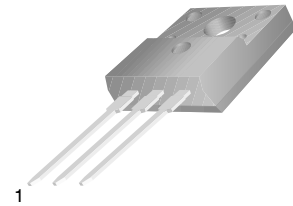


NPN Epitaxial Silicon Transistor

Low Frequency Power Amplifier

KSD2012

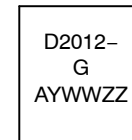
- Complementary to KSB1366
- This is a Pb-Free Device



- Base
- Collector
- Emitter

TO-220 Fullpack
CASE 221AT

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

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.

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

TYPICAL CHARACTERISTICS

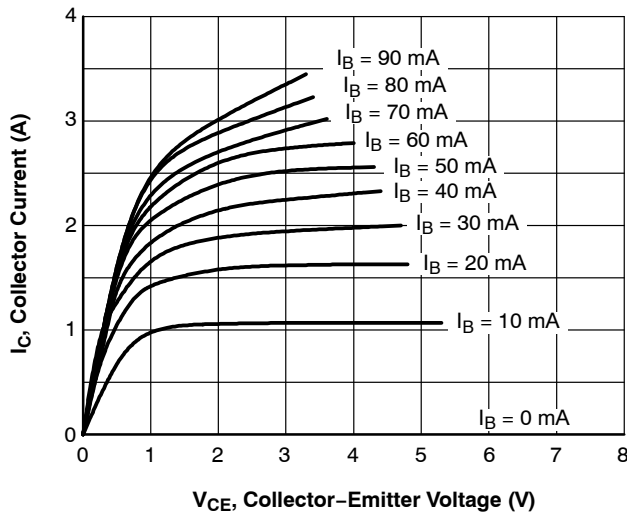


Figure 1. Static Characteristic

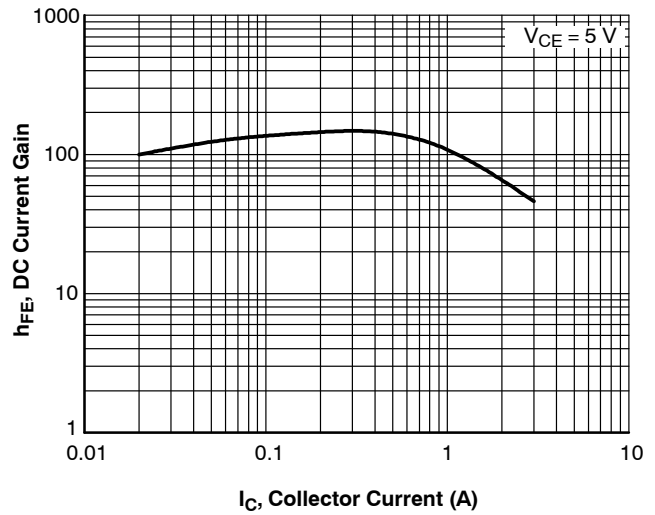


Figure 2. DC Current Gain

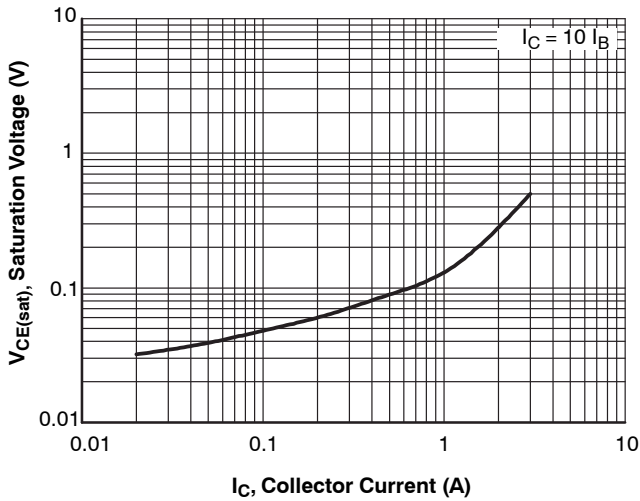


Figure 3. Collector-Emitter Saturation Voltage

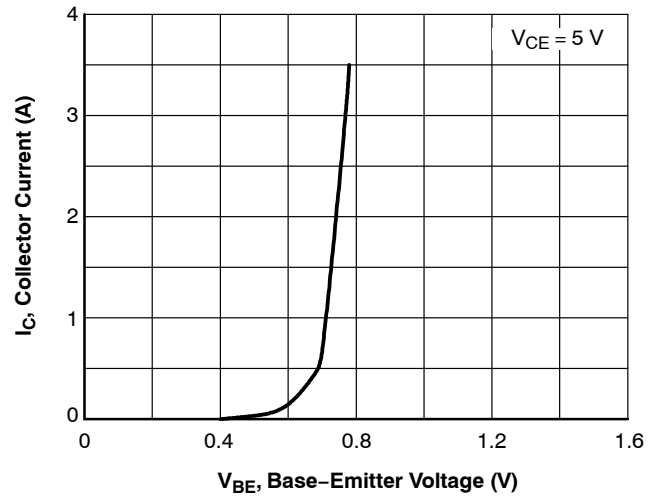


Figure 4. Base-Emitter On Voltage

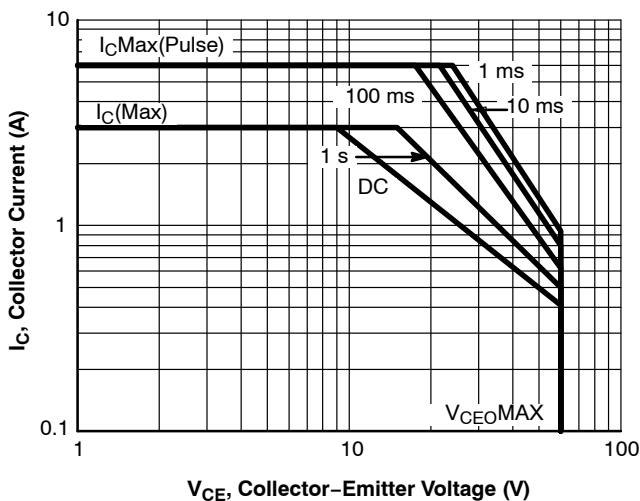


Figure 5. Safe Operating Area

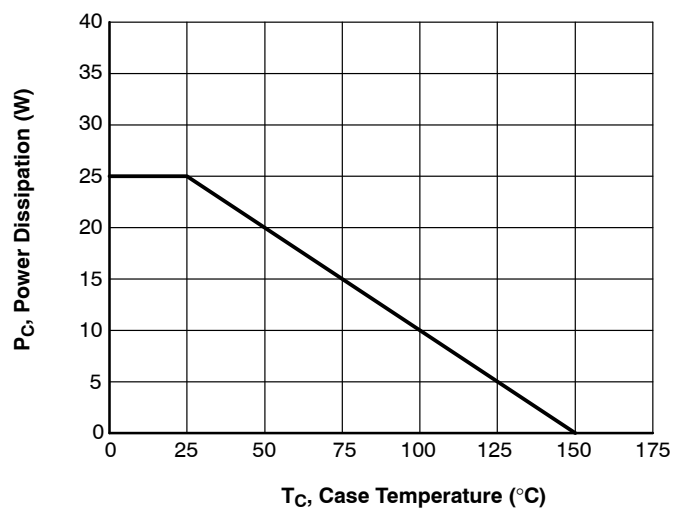
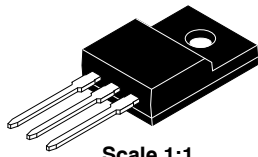


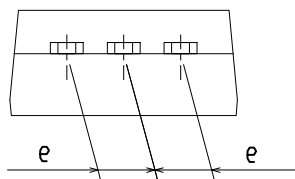
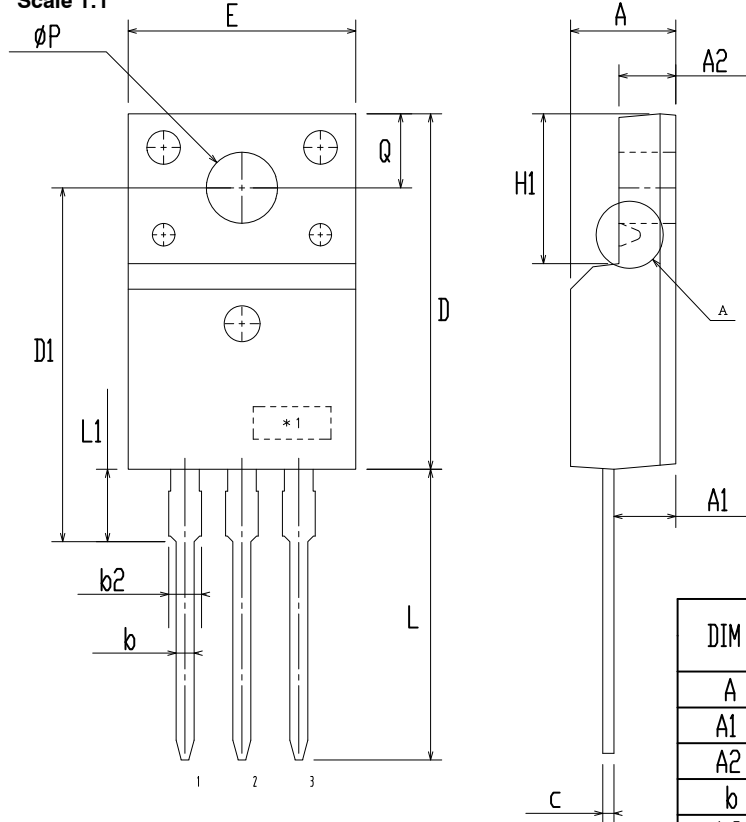
Figure 6. Power Derating

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

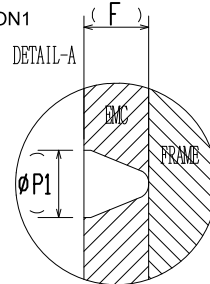
DATE 19 JAN 2021



Scale 1:1



OPTION1



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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