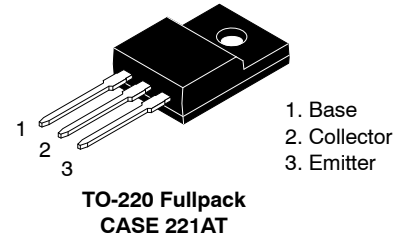


NPN Epitaxial Silicon Transistor

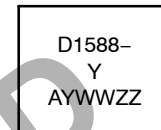
KSD1588

Low Frequency Power Amplifier

- Low Speed Switching
- Complement to KSB1097
- This is a Pb-Free Device



MARKING DIAGRAM



D1588 = Specific Device Code
Y = h_{FE} Grade
A = Site Code
YWW = Date Code (Year & Week)
ZZ = Assembly Lot Code

ORDERING INFORMATION

Device	Package	Shipping
KSD1588YTU	TO-220 Fullpack (Pb-Free)	1,000 Units / Tube

ABSOLUTE MAXIMUM RATINGS

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

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	100	V
V_{CEO}	Collector-Emitter Voltage	60	V
V_{EBO}	Emitter-Base Voltage	7	V
I_C	Collector Current (DC)	7	A
I_{CP}	Collector Current (Pulse) (Note 1)	15	A
I_B	Base Current	3.5	A
P_C	Collector Dissipation ($T_A = 25^\circ\text{C}$)	2	W
	Collector Dissipation ($T_C = 25^\circ\text{C}$)	30	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.

1. $PW \leq 300 \mu\text{s}$, Duty Cycle $\leq 10\%$.

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

Symbol	Parameter	Test Conditions	Min	Max	Unit
I_{CBO}	Collector Cut-off Current	$V_{CB} = 80 \text{ V}$, $I_E = 0$	–	10	mA
I_{EBO}	Emitter Cut-off Current	$V_{EB} = 5 \text{ V}$, $I_C = 0$	–	10	mA
h_{FE1} h_{FE2}	DC Current Gain (Note 2)	$V_{CE} = 1 \text{ V}$, $I_C = 3 \text{ A}$ $V_{CE} = 1 \text{ V}$, $I_C = 5 \text{ A}$	40 20	200 –	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage (Note 2)	$I_C = 5 \text{ A}$, $I_B = 0.5 \text{ A}$	–	0.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage (Note 2)	$I_C = 5 \text{ A}$, $I_B = 0.5 \text{ A}$	–	1.5	V

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.

2. Pulse Test: $PW \leq 350 \mu\text{s}$, Duty Cycle $\leq 2\%$.

h_{FE1} Classification

Classification	R	O	Y
h_{FE1}	40 ~ 80	80 ~ 120	100 ~ 200

TYPICAL CHARACTERISTICS

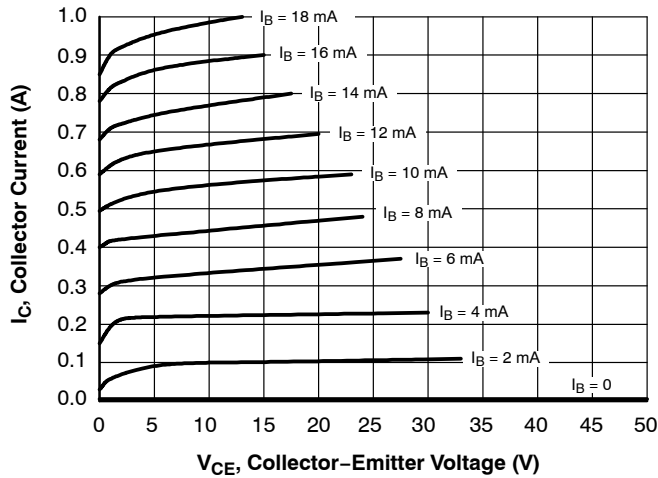


Figure 1. Static Characteristic

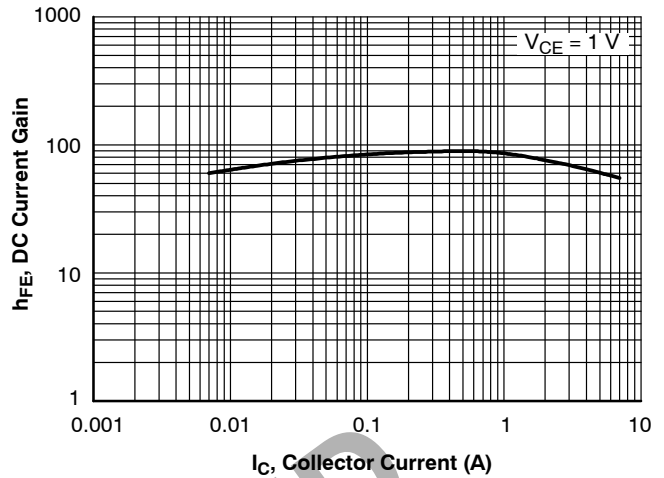


Figure 2. DC Current Gain

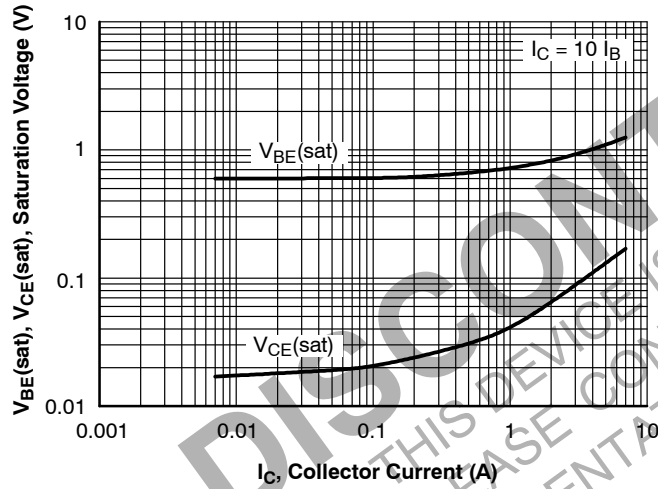


Figure 3. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

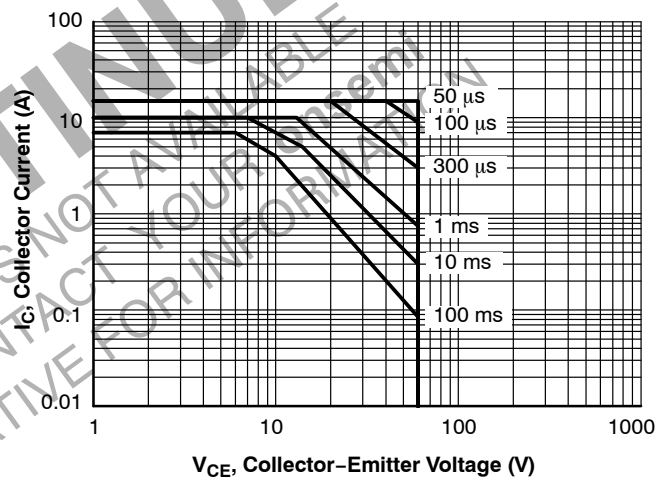


Figure 4. Safe Operating Area

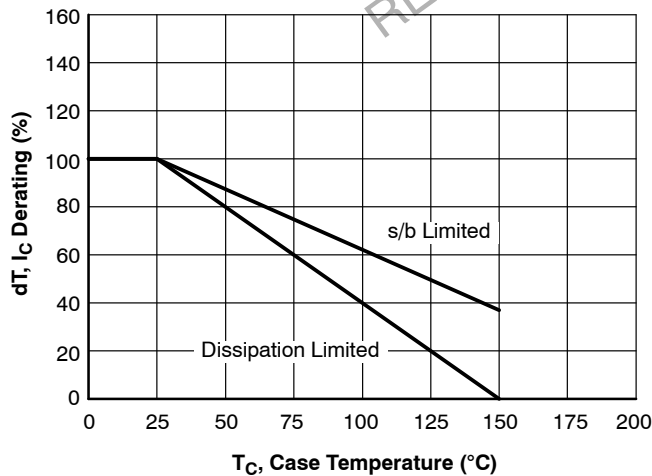


Figure 5. Derating Curve Safe Operating Area

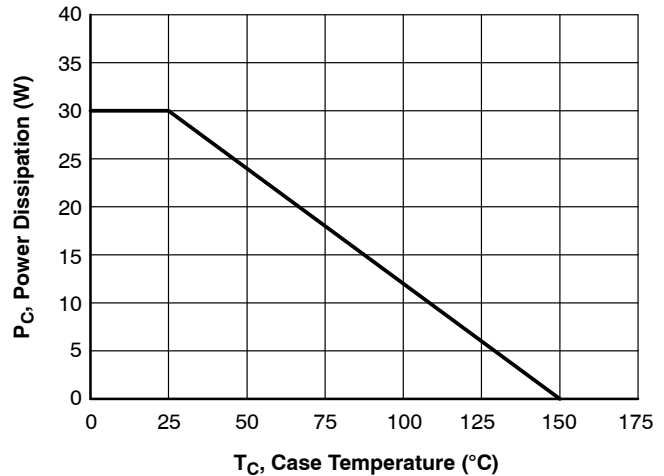


Figure 6. Power Derating

REVISION HISTORY

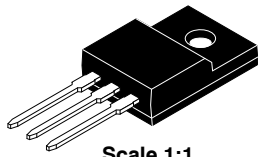
Revision	Description of Changes	Date
2	Data Sheet Discontinued.	1/16/2025

This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.

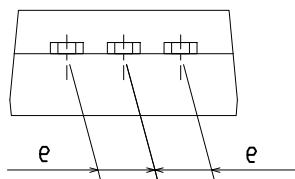
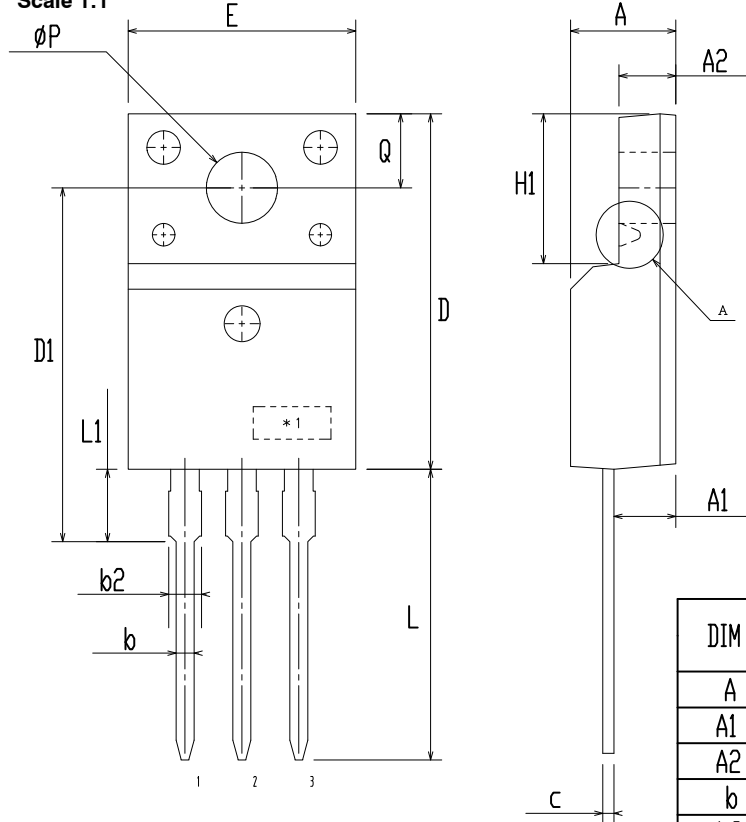
DISCONTINUED
THIS DEVICE IS NOT AVAILABLE
PLEASE CONTACT YOUR onsemi
REPRESENTATIVE FOR INFORMATION

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

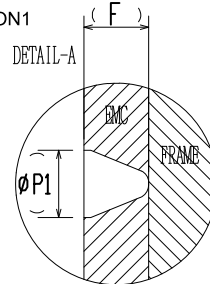
DATE 19 JAN 2021



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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