

PNP Epitaxial Silicon Transistor

KSA1010

High Speed High Voltage Switching

- Industrial Use
- Complement to KSC2334

ABSOLUTE MAXIMUM RATINGS

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

Symbol	Parameter	Ratings	Unit
V_{CBO}	Collector-Base Voltage	-100	V
V_{CEO}	Collector-Emitter Voltage	-100	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 ($T_C = 25^\circ\text{C}$)	40	W
	Collector Dissipation ($T_A = 25^\circ\text{C}$)	1.5	W
T_J	Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature	-55 to 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.)

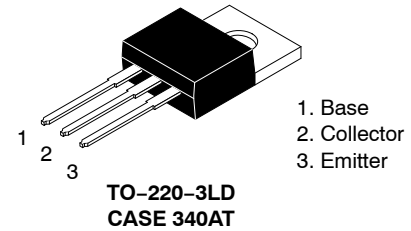
Symbol	Parameter	Conditions	Min	Max	Unit
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage	$I_C = -5 \text{ A}$, $I_{B1} = -0.5 \text{ A}$, $L = 1 \text{ mH}$	-100	-	V
$V_{CEX(sus)1}$	Collector-Emitter Sustaining Voltage	$I_C = -5 \text{ A}$, $I_{B1} = -I_{B2} = -0.5 \text{ A}$, $V_{BE(off)} = 5 \text{ V}$, $L = 180 \mu\text{H}$, Clamped	-100	-	V
$V_{CEX(sus)2}$	Collector-Emitter Sustaining Voltage	$I_C = -10 \text{ A}$, $I_{B1} = -1 \text{ A}$, $I_{B2} = 0.5 \text{ A}$, $V_{BE(off)} = 5 \text{ V}$, $L = 180 \mu\text{H}$, Clamped	-100	-	V
I_{CBO}	Collector Cut-off Current	$V_{CB} = -100 \text{ V}$, $I_E = 0$	-	-10	μA
I_{CER}	Collector Cut-off Current	$V_{CE} = -100 \text{ V}$, $R_{BE} = 51 \Omega$, $T_C = 125^\circ\text{C}$	-	-1	mA
I_{CEX1}	Collector Cut-off Current	$V_{CE} = -100 \text{ V}$, $V_{BE(off)} = 1.5 \text{ V}$	-	-10	μA
I_{CEX2}	Collector Cut-off Current	$V_{CE} = -100 \text{ V}$, $V_{BE(off)} = 1.5 \text{ V}$, $T_C = 125^\circ\text{C}$	-	-1	mA
I_{EBO}	Emitter Cut-off Current	$V_{EB} = -5 \text{ V}$, $I_C = 0$	-	-10	μA
h_{FE1} h_{FE2} h_{FE3}	DC Current Gain (Note 2)	$V_{CE} = -5 \text{ V}$, $I_C = -0.5 \text{ A}$ $V_{CE} = -5 \text{ V}$, $I_C = -3 \text{ A}$ $V_{CE} = -5 \text{ V}$, $I_C = -5 \text{ A}$	40 40 20	- 200 -	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage (Note 2)	$I_C = -5 \text{ A}$, $I_B = -0.5 \text{ A}$	-	-0.6	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage (Note 2)	$I_C = -5 \text{ A}$, $I_B = -0.5 \text{ A}$	-	-1.5	V
t_{ON}	Turn On Time	$V_{CC} = -50 \text{ V}$, $I_C = -5 \text{ A}$, $I_{B1} = -I_{B2} = -0.5 \text{ A}$, $R_L = 10 \Omega$	-	0.5	μs
t_{STG}	Storage Time		-	1.5	μs
t_F	Fall Time		-	0.5	μs

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.

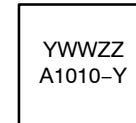
2. Pulse Test: $PW \leq 350 \mu\text{s}$, Duty Cycle $\leq 2\%$.

h_{FE} Classification

Classification	R	O	Y
h_{FE2}	40 ~ 80	60 ~ 120	100 ~ 200



MARKING DIAGRAM



YWW = Date Code (Year & Week)
 ZZ = Lot Run Traceability Code
 A1010 = Specific Device Code
 Y = h_{FE} Grade

ORDERING INFORMATION

Device	Package	Shipping
KSA1010YTU	TO-220-3LD (Pb-Free)	1000 Units / Tube

TYPICAL CHARACTERISTICS

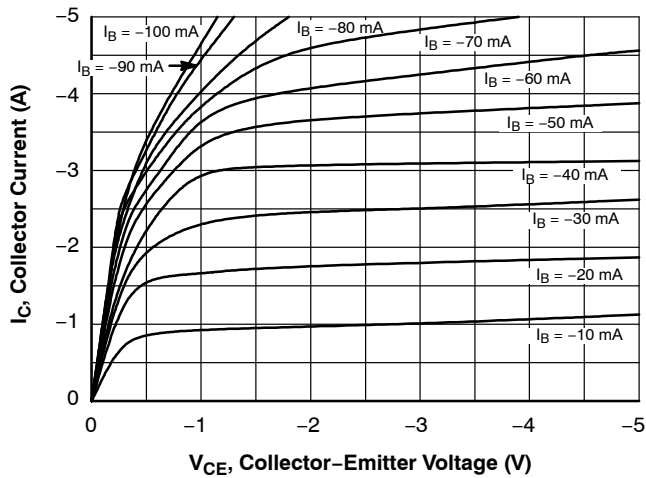


Figure 1. Static Characteristic

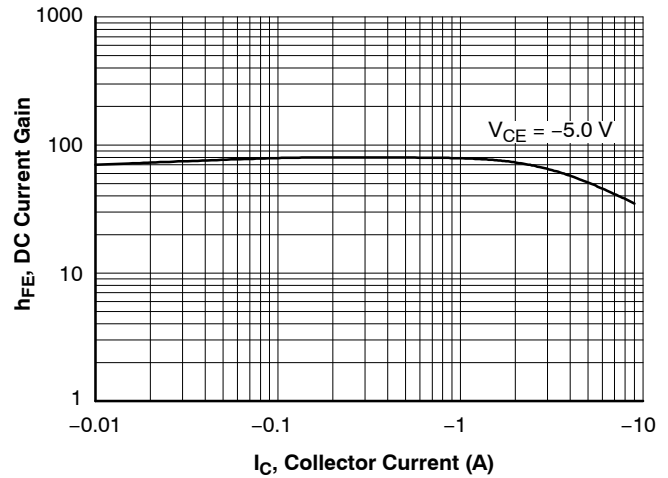


Figure 2. DC Current Gain

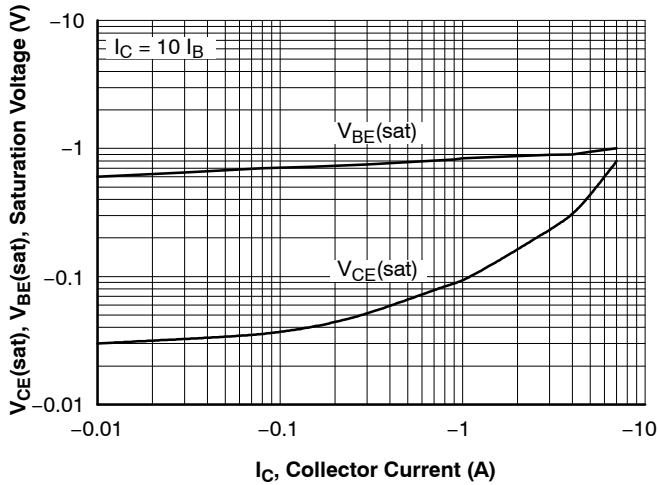
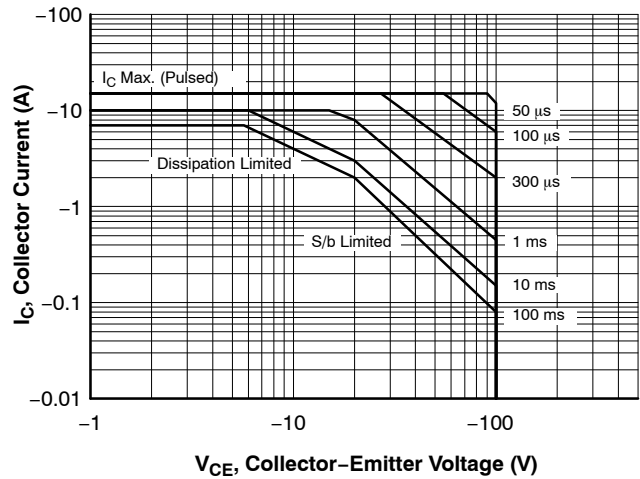
Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

Figure 4. Safe Operating Area

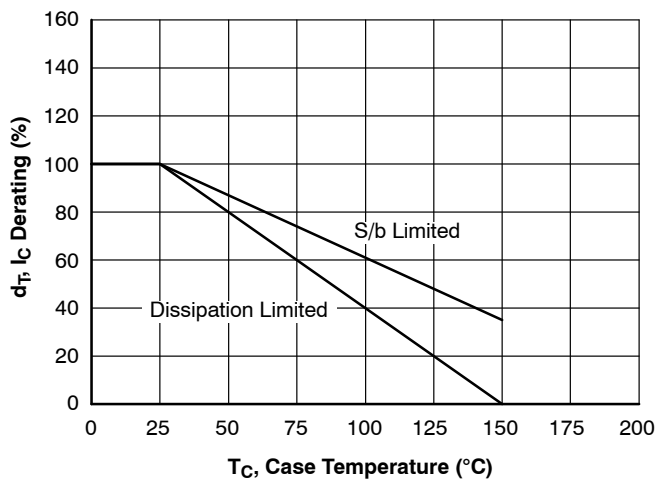


Figure 5. Derating Curve of Safe Operating Areas

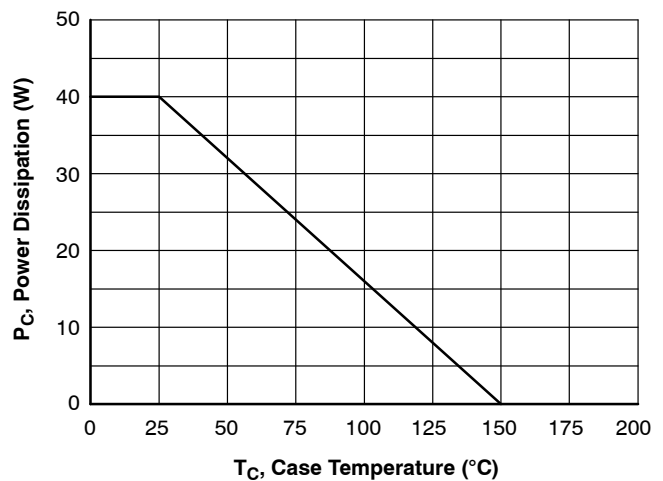
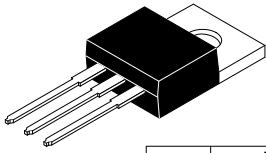


Figure 6. Power Derating



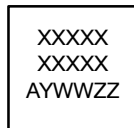
TO-220-3LD
CASE 340AT
ISSUE B

DATE 08 AUG 2022

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	4.00	--	4.70
A1	SEE NOTE "F"		
A2	2.10	--	2.85
b	0.55	--	1.00
b2	1.10	--	1.62
b4	1.42	--	1.62
c	0.36	--	0.60
D	13.90	--	16.30
D1	8.13	--	9.40
D2	11.50	--	14.30
D3	15.42	--	16.51
E	9.65	--	10.67
E1	7.59	--	8.65
e	2.40	--	2.67
H1	6.06	--	6.69
L	12.70	--	14.04
L1	2.70	--	4.10
P	3.50	--	4.00
Q	2.50	--	3.40
z	2.13 REF		
z1	2.06 REF		
θ	3°	--	5°

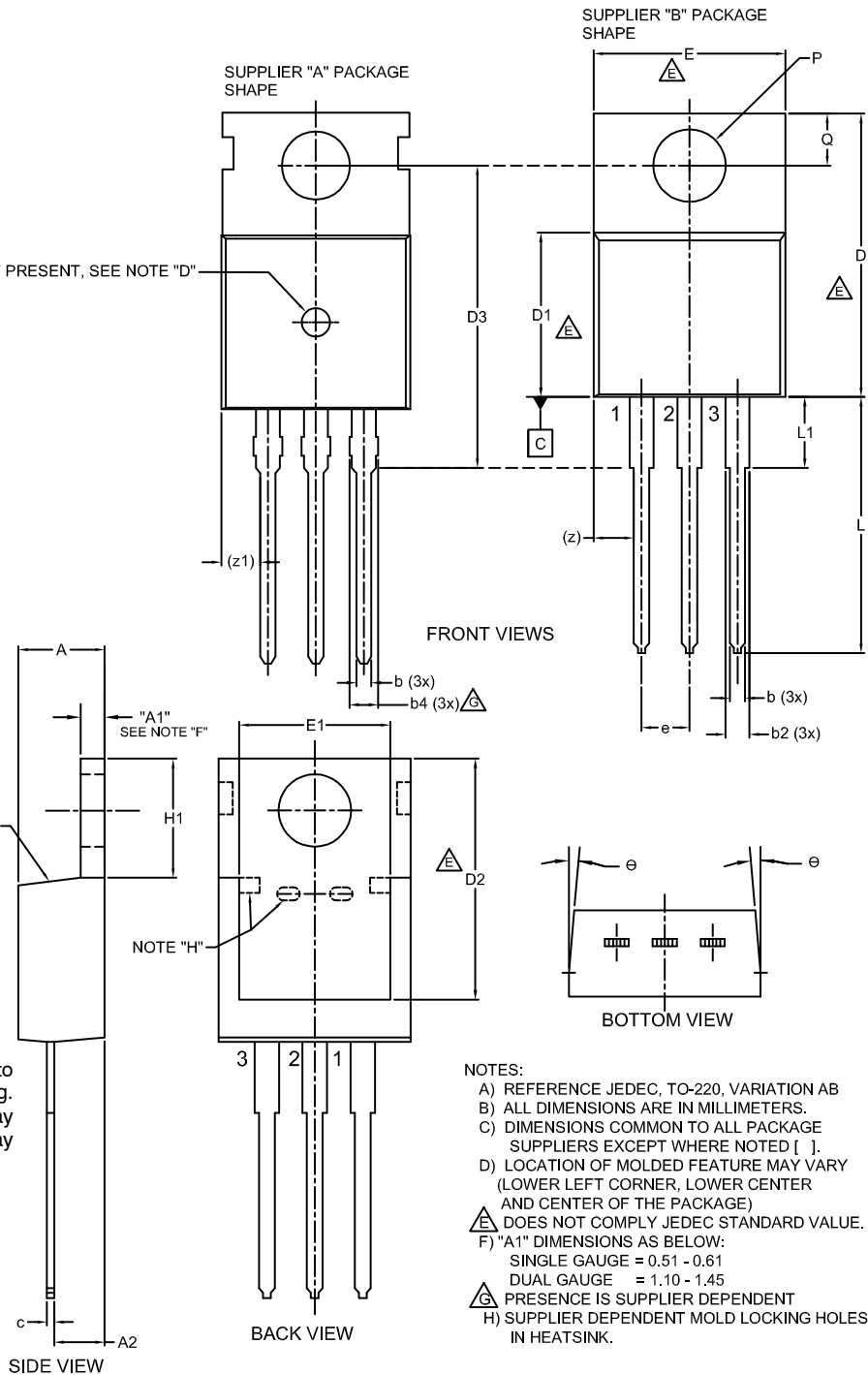
IF PRESENT, SEE NOTE "D"

GENERIC
MARKING DIAGRAM*



XXXX = Specific Device Code
A = Assembly Location
Y = Year
WW = Work Week
ZZ = Assembly Lot Code

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.



NOTES:

- A) REFERENCE JEDEC, TO-220, VARIATION AB
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS COMMON TO ALL PACKAGE SUPPLIERS EXCEPT WHERE NOTED [].
- D) LOCATION OF MOLDED FEATURE MAY VARY (LOWER LEFT CORNER, LOWER CENTER AND CENTER OF THE PACKAGE)
- E) DOES NOT COMPLY JEDEC STANDARD VALUE.
- F) "A1" DIMENSIONS AS BELOW:
SINGLE GAUGE = 0.51 - 0.61
DUAL GAUGE = 1.10 - 1.45
- G) PRESENCE IS SUPPLIER DEPENDENT
- H) SUPPLIER DEPENDENT MOLD LOCKING HOLES IN HEATSINK.

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