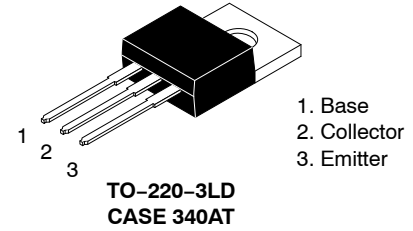


PNP Epitaxial Silicon Transistor

KSA1010

High Speed High Voltage Switching

- Industrial Use
- Complement to KSC2334



ABSOLUTE MAXIMUM RATINGS

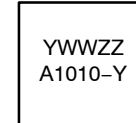
($T_C = 25^\circ\text{C}$ unless otherwise noted.)

| 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 $\leq 10\%$.

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 |

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 |

TYPICAL CHARACTERISTICS

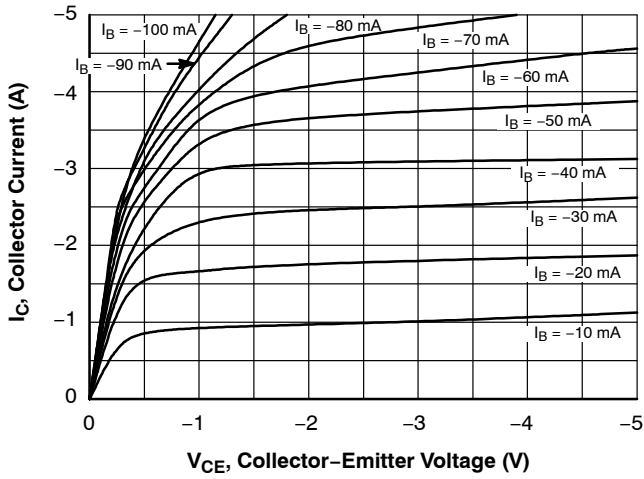


Figure 1. Static Characteristic

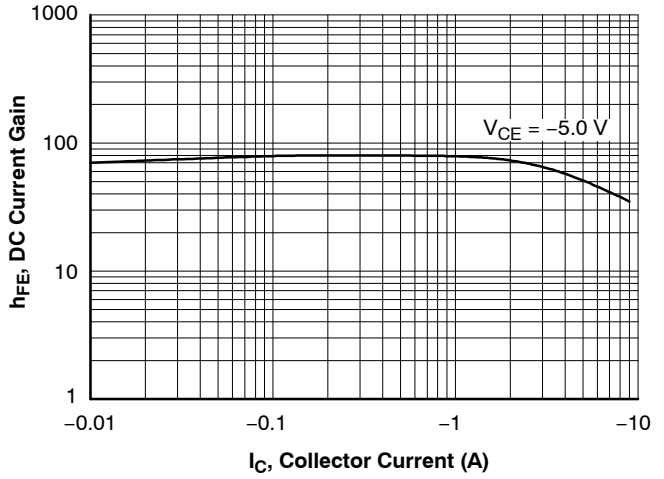


Figure 2. DC Current Gain

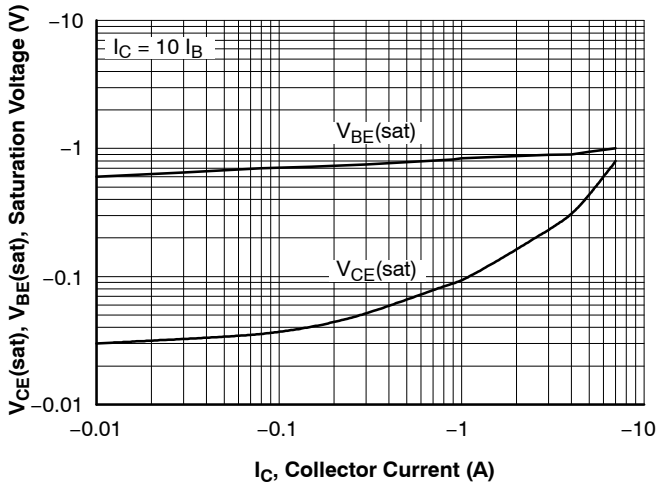


Figure 3. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

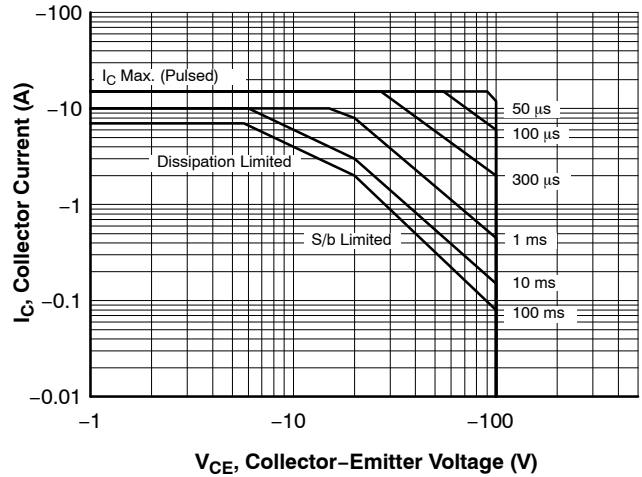


Figure 4. Safe Operating Area

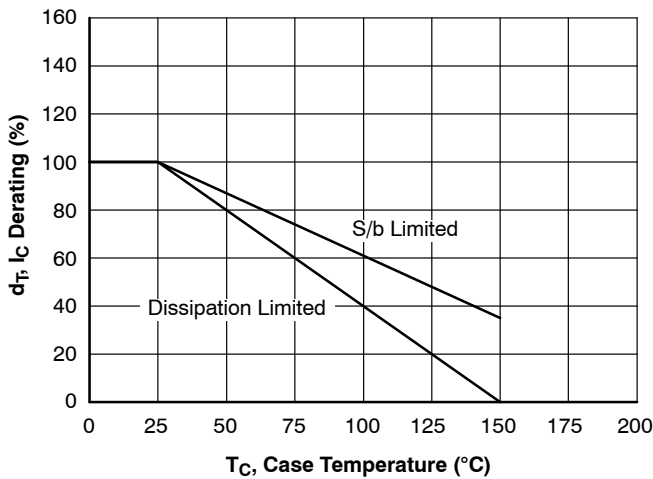


Figure 5. Derating Curve of Safe Operating Areas

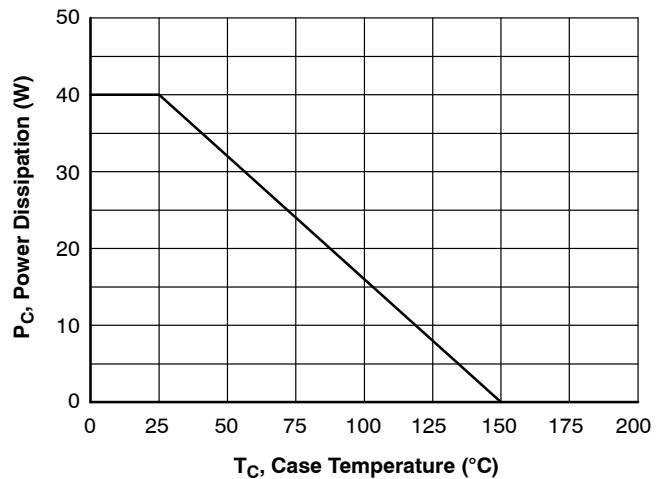
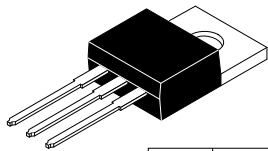


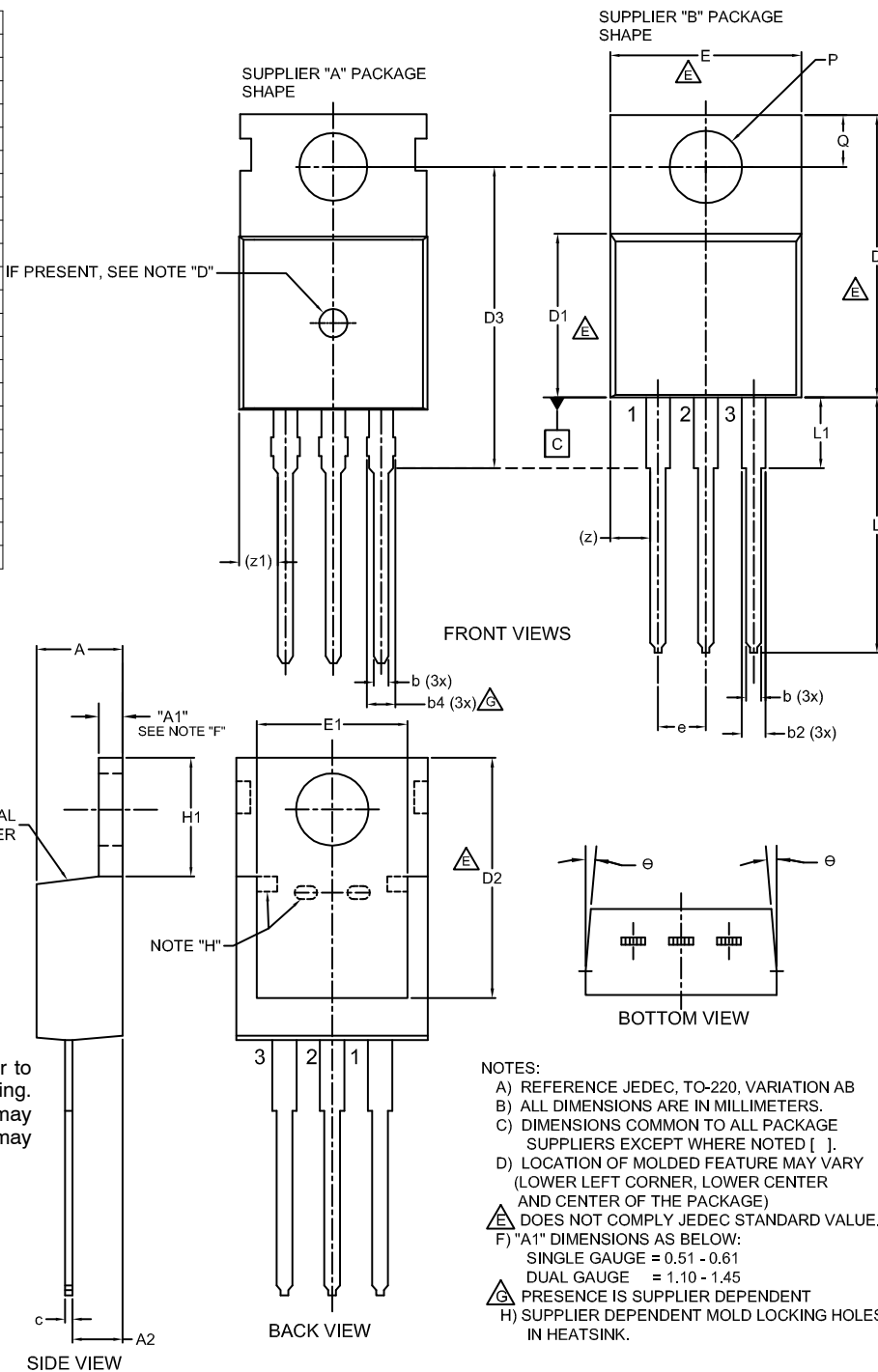
Figure 6. Power Derating



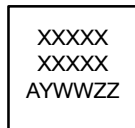
TO-220-3LD
CASE 340AT
ISSUE B

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° |



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)
- ⚠ DOES NOT COMPLY JEDEC STANDARD VALUE.
- F) "A1" DIMENSIONS AS BELOW:
 SINGLE GAUGE = 0.51 - 0.61
 DUAL GAUGE = 1.10 - 1.45
- ⚠ PRESENCE IS SUPPLIER DEPENDENT
- H) SUPPLIER DEPENDENT MOLD LOCKING HOLES IN HEATSINK.

| | | |
|------------------|-------------|---|
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