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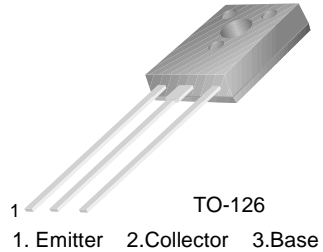


# KSA1156

KSA1156

## High Voltage Switching Low Power Switching Regulator DC-DC Converter

- High Breakdown Voltage
- Low Collector Saturation Voltage
- High Speed Switching



## PNP Silicon Transistor

### Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol    | Parameter  | Ratings    | Units            |
|-----------|--|------------|------------------|
| $V_{CBO}$ | Collector-Base Voltage                           | - 400      | V                |
| $V_{CEO}$ | Collector-Emitter Voltage                        | - 400      | V                |
| $V_{EBO}$ | Emitter-Base Voltage                             | - 7        | V                |
| $I_B$     | Base Current                                     | - 0.25     | A                |
| $I_C$     | Collector Current (DC)                           | - 0.5      | A                |
| $I_{CP}$  | Collector Current (Pulse)                        | - 1        | A                |
| $P_C$     | Collector Dissipation ( $T_a=25^\circ\text{C}$ ) | 1          | W                |
| $P_C$     | Collector Dissipation ( $T_C=25^\circ\text{C}$ ) | 10         | W                |
| $T_J$     | Junction Temperature                             | 150        | $^\circ\text{C}$ |
| $T_{STG}$ | Storage Temperature                              | - 55 ~ 150 | $^\circ\text{C}$ |

### Electrical Characteristics $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol         | Parameter                            | Test Condition  | Min.  | Max.  | Units         |
|----------------|--------------------------------------|---|-------|-------|---------------|
| $V_{CEO(sus)}$ | Collector-Emitter Sustaining Voltage | $I_C = - 100\text{mA}$ , $I_B = - 10\text{mA}$<br>$L = - 20\text{mH}$   | - 400 |       | V             |
| $V_{CEX(sus)}$ | Collector-Emitter Sustaining Voltage | $I_C = - 200\text{mA}$ , $I_{B1} = - I_{B2} = - 20\text{mA}$<br>$V_{BE(off)} = 5\text{V}$ , $L = 10\text{mH}$                       | - 400 |       | V             |
| $I_{CBO}$      | Collector Cut-off Current            | $V_{CB} = - 400\text{V}$ , $I_E = 0$  |       | - 100 | $\mu\text{A}$ |
| $I_{EBO}$      | Emitter Cut-off Current              | $V_{EB} = - 5\text{V}$ , $I_C = 0$  |       | - 10  | $\mu\text{A}$ |
| $I_{CEX1}$     | Collector Cut-off Current            | $V_{CE} = - 400\text{V}$ , $V_{BE(off)} = 1.5\text{V}$  |       | - 100 | $\mu\text{A}$ |
| $I_{CEX2}$     | Collector Cut-off Current            | $V_{CE} = - 400\text{V}$ , $V_{BE(off)} = 1.5\text{V}$<br>$T_C = 125^\circ\text{C}$   |       | - 1   | mA            |
| $h_{FE}$       | DC Current Gain                      | $V_{CE} = - 5\text{V}$ , $I_C = - 100\text{mA}$   | 30    | 200   |               |
| $V_{CE(sat)}$  | Collector-Emitter Saturation Voltage | $I_C = - 100\text{mA}$ , $I_B = - 10\text{mA}$  |       | - 1   | V             |
| $V_{BE(sat)}$  | Base-Emitter Saturation Voltage      | $I_C = - 100\text{mA}$ , $I_B = - 10\text{mA}$  |       | - 1.2 | V             |
| $t_{ON}$       | Turn On Time                         | $V_{CC} = - 150\text{V}$ , $I_C = - 100\text{mA}$<br>$I_{B1} = - 10\text{mA}$ , $I_{B2} = 20\text{mA}$<br>$R_L = 1.5\text{K}\Omega$ |       | 1     | $\mu\text{s}$ |
| $t_{STG}$      | Storage Time                         |   |       | 4     | $\mu\text{s}$ |
| $t_F$          | Fall Time                            |   |       | 1     | $\mu\text{s}$ |

### $h_{FE}$ Classification

| Classification | N       | R       | O        | Y         |
|----------------|---------|---------|----------|-----------|
| $h_{FE}$       | 30 ~ 60 | 40 ~ 80 | 60 ~ 120 | 100 ~ 200 |

# Typical Characteristics

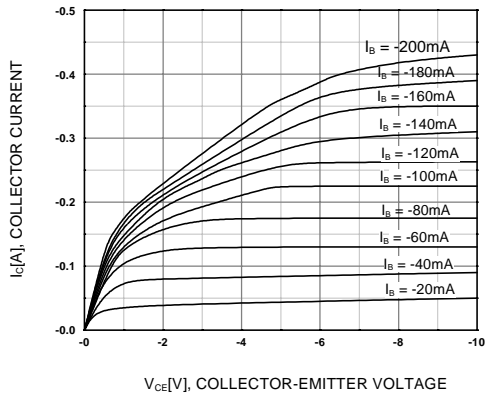


Figure 1. Static Characteristic

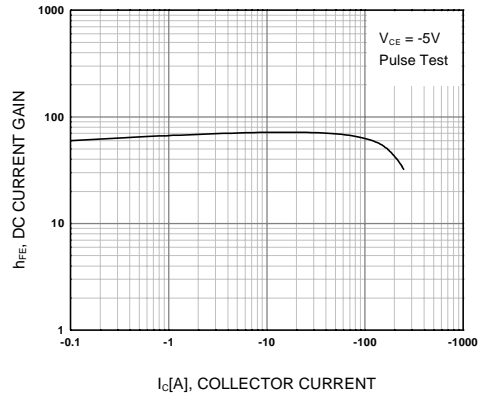


Figure 2. DC current Gain

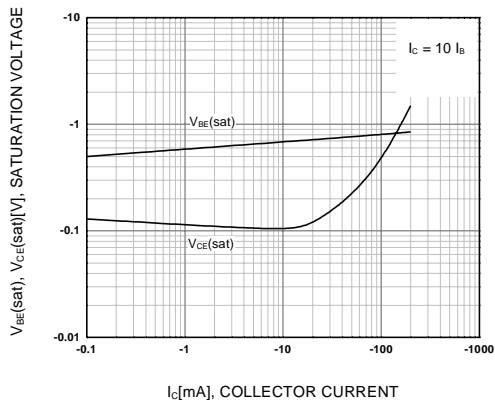


Figure 3. Collector-Emitter Saturation Voltage  
Base-Emitter Saturation Voltage

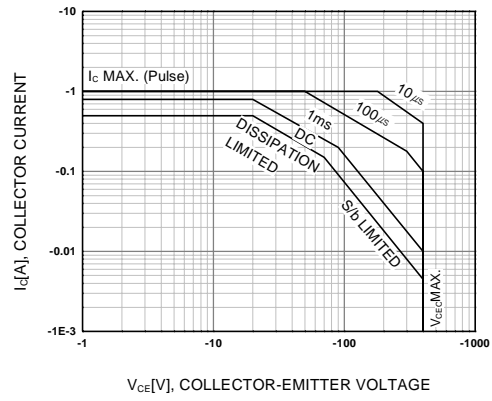


Figure 4. Safe Operating Area

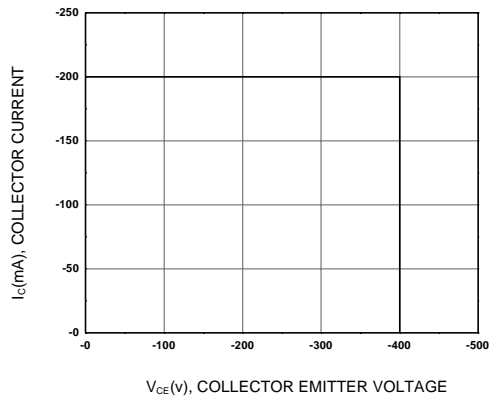


Figure 5. Reverse Bias Safe Operating Area

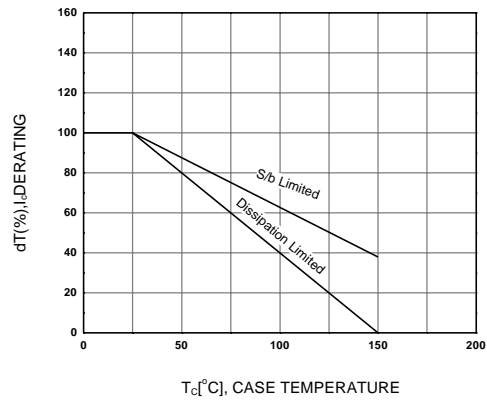


Figure 6. Derating Curve of Safe Operating Areas

### Typical characteristics (Continued)

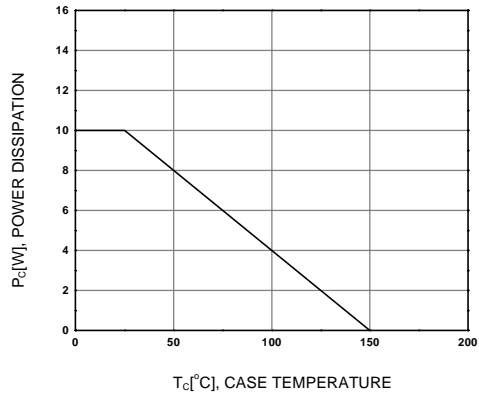
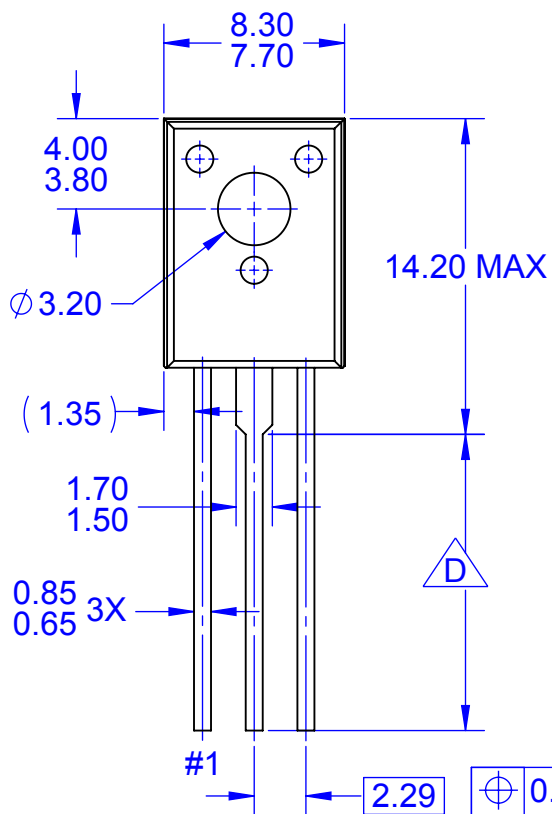
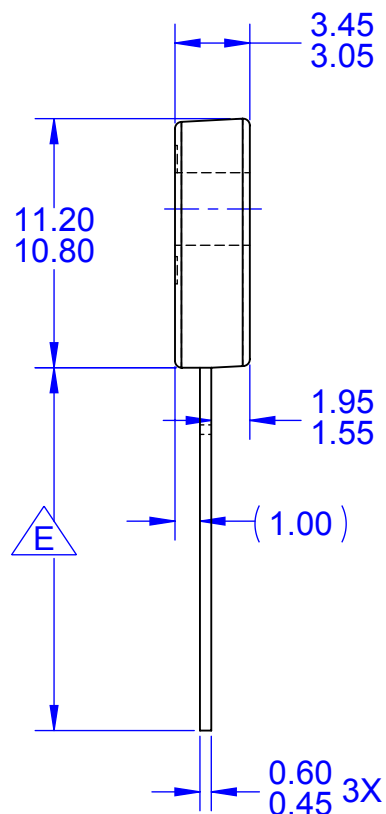


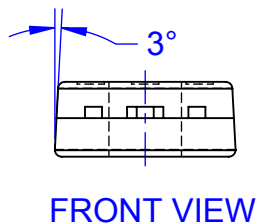
Figure 7. Power Derating



TOP VIEW



SIDE VIEW



FRONT VIEW

| PRODUCTION CODE   | TERMINAL LENGTH "D" | TERMINAL LENGTH "E" |
|-------------------|---------------------|---------------------|
| TSSTU             | 3.45 - 4.05         | 6.45-7.45           |
| TSTU              | 2.36 - 2.96         | 5.36-6.36           |
| NONE (STD LENGTH) | 12.76 - 13.36       | 15.76-16.76         |

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- C. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR PROTRUSIONS

 FOR TERMINAL LENGTH "D", REFER TO TABLE

 FOR TERMINAL LENGTH "E", REFER TO TABLE

F. DRAWING FILENAME: MKT-TO126AArev2



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