



PRODUCT SPECIFICATIONS

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TYPE: MJW16212

CASE OUTLINE: TO-247

NPN SILICON HIGH VOLTAGE POWER TRANSISTOR

ABSOLUTE MAXIMUM RATING:

| | | | |
|--|-----------------|-------------|------------------|
| Collector to Base Voltage | BV_{CBO} | | Vdc |
| Collector to Emitter Voltage | BV_{CEV} | 1500 | Vdc |
| Emitter to Base | BV_{EBO} | 8.0 | Vdc |
| Collector to Emitter | $BV_{CEO(sus)}$ | 650 | Vdc |
| Continuous Collector Current | I_C | 10 | Adc |
| Peak Collector Current | I_{CM} | 15 | Adc |
| Power Dissipation $T_A = 25\text{ }^\circ\text{C}$ | P_D | 150 | Watts |
| Power Dissipation $T_C = 25\text{ }^\circ\text{C}$ | P_D | | Watts |
| Storage Temperature | T_{stg} | -55 to +125 | $^\circ\text{C}$ |
| Operating Temperature | T_J | -55 to +125 | $^\circ\text{C}$ |
| Lead Temperature From Case | T_L | 275 | $^\circ\text{C}$ |

ELECTRICAL CHARACTERISTICS $T_A @ 25\text{ }^\circ\text{C}$

| PARAMETERS | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|------------------------------|-----------------|--|-----|-----|-----|---------------|
| Collector to Base Voltage | BV_{CBO} | | | | | Vdc |
| Emitter to Base Voltage | BV_{EBO} | $I_E = 1.0\text{mA}$ | 8.0 | | | Vdc |
| Collector to Emitter Voltage | $BV_{CEO(sus)}$ | $I_C = 10\text{mA}$ $I_B = 0$ | 650 | | | Vdc |
| Collector to Emitter Voltage | BV_{CEO} | | | | | Vdc |
| Collector to Emitter Voltage | BV_{CEV} | | | | | Vdc |
| Collector Cutoff Current | I_{CBO} | | | | | mA |
| Collector Cutoff Current | I_{CBO} | | | | | mA |
| Collector Cutoff Current | I_{CES} | $V_{CE} = 1500\text{V}$ $V_{BE} = 0$ | | | 250 | μA |
| Collector Cutoff Current | I_{CES} | $V_{CE} = 1200\text{V}$ $V_{BE} = 0$ | | | 25 | μA |
| Collector Cutoff Current | I_{CEV} | | | | | mA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 8.0\text{V}$ | | | 25 | μA |
| D.C. Current Gain Pulsed* | h_{FE} | $I_C = 1.0\text{A}$ $V_{CE} = 5.0\text{V}$ | | 24 | | - |
| D.C. Current Gain Pulsed* | h_{FE} | $I_C = 10\text{A}$ $V_{CE} = 5.0\text{V}$ | 4.0 | 6.0 | 10 | - |
| D.C. Current Gain Pulsed* | h_{FE} | | | | | - |
| D.C. Current Gain Pulsed* | h_{FE} | | | | | - |
| D.C. Current Gain Pulsed* | h_{FE} | | | | | - |
| Saturation Voltage* | $V_{CE(sat)}$ | $I_C = 5.5\text{A}$ $I_B = 2.2\text{A}$ | | | 1.0 | Vdc |
| Saturation Voltage* | $V_{CE(sat)}$ | $I_C = 3.0\text{A}$ $I_B = 400\text{mA}$ | | | 1.0 | Vdc |
| Saturation Voltage* | $V_{CE(sat)}$ | | | | | Vdc |
| Base Emitter Voltage* | $V_{BE(sat)}$ | $I_C = 5.5\text{A}$ $I_B = 2.2\text{A}$ | | | 1.5 | Vdc |
| Base Emitter Voltage* | $V_{BE(sat)}$ | | | | | Vdc |
| Base Emitter Voltage* | $V_{BE(sat)}$ | | | | | Vdc |
| Base Emitter Voltage* | $V_{BE(on)}$ | | | | | Vdc |

Notes: *Pulse Width $\leq 300\mu\text{sec}$ 2% Duty Cycle



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SMALL SIGNAL CHARACTERISTICS

| | SYMBOL | MIN | TYP | MAX | UNITS |
|---|----------|-----|------|-----|------------|
| Current Gain at F = | h_{fe} | | | | - |
| Input Capacitance | C_{ib} | | | | pf |
| Output Capacitance $V_{CE} = 10V$ $I_E = 0$ $f_{test} = 100KHz$ | C_{ob} | | | 350 | pf |
| Transition Frequency $I_C = 0.5A$ $V_{CE} = 10V$ $f_{test} = 1.0MHz$ | f_T | | 2.75 | | MHz |
| Input Impedance | | | | | Ohms |
| Voltage Feedback Ratio | | | | | X10-4 |
| Output Admittance | | | | | $\mu mhos$ |
| Noise Figure | NF | | | | dB |

SWITCHING CHARACTERISTICS

| Resistive Load | | | SYMBOL | MIN | TYP | MAX | UNITS |
|-----------------------|------------------------------|--|-----------|-----|-----|------|---------|
| Turn-On Time | | | t_{on} | | | | μs |
| Turn-Off Time | | | t_{off} | | | | μs |
| Delay Time | | | t_d | | | | μs |
| Rise Time | | | t_r | | | | μs |
| Storage Time | | | t_s | | | | μs |
| Fall Time | | | t_f | | | | μs |
| Inductive Load | | | SYMBOL | MIN | TYP | MAX | UNITS |
| Storage Time | $I_C = 5.5A$ $I_B = 2.2A$ | | t_{sv} | | | 4000 | ns |
| Crossover Time | | | t_c | | | | μs |
| Fall Time | | | t_{fi} | | | 500 | ns |
| Storage Time | | | t_{sv} | | | | μs |
| Crossover Time | | | t_c | | | | μs |
| Fall Time | | | t_{fi} | | | | μs |

FUNCTIONAL TEST

| | SYMBOL | MIN | TYP | MAX | UNITS |
|--------------------------------------|-----------------|-----|-----|------|---------------|
| Common-Emitter Amplifier Power Gain | GPE | | | | dB |
| Power Output | Pout | | | | Watt |
| Collector Efficiency | η | | | | % |
| Power Output | Pout | | | | Watt |
| Second Breakdown Collector Current | $I_{S/B}$ | | | | A |
| Thermal-Resistance, Junction to Case | $R_{\theta JC}$ | | | 0.67 | $^{\circ}C/W$ |