

isc Silicon NPN Power Transistor

2SC4106

DESCRIPTION

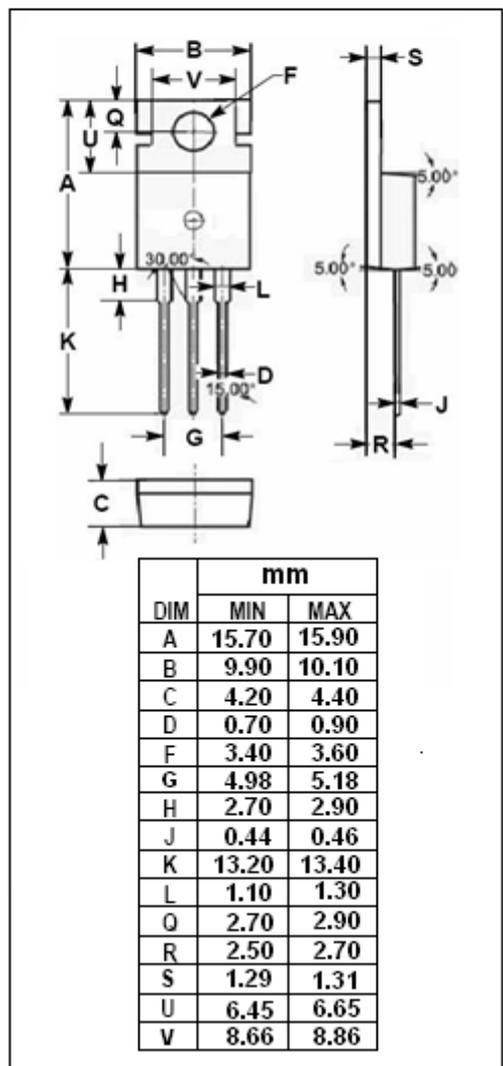
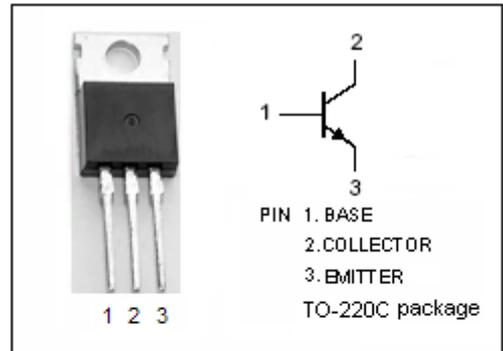
- High Collector-Emitter Breakdown Voltage
: $V_{(BR)CEO} = 400V(\text{Min.})$
- High Switching Speed
- Wide Area of Safe Operation

APPLICATIONS

- Designed for switching regulator applications

ABSOLUTE MAXIMUM RATINGS(Ta=25°C)

| SYMBOL | PARAMETER | VALUE | UNIT |
|-----------|---|---------|------|
| V_{CBO} | Collector-Base Voltage | 500 | V |
| V_{CEO} | Collector-Emitter Voltage | 400 | V |
| V_{EBO} | Emitter-Base Voltage | 7 | V |
| I_C | Collector Current-Continuous | 7 | A |
| I_{CM} | Collector Current-Peak | 14 | A |
| I_B | Base Current-Continuous | 3 | A |
| P_C | Collector Power Dissipation@ $T_C=25^\circ\text{C}$ | 50 | W |
| | Collector Power Dissipation@ $T_a=25^\circ\text{C}$ | 1.75 | |
| T_J | Junction Temperature | 150 | °C |
| T_{stg} | Storage Temperature Range | -55~150 | °C |



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ELECTRICAL CHARACTERISTICS

 $T_C=25^{\circ}\text{C}$ unless otherwise specified

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP. | MAX | UNIT |
|---------------|--------------------------------------|---|-----|------|-----|---------------|
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage | $I_C=5\text{mA}$; $R_{BE}=\infty$ | 400 | | | V |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C=1\text{mA}$; $I_E=0$ | 500 | | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E=1\text{mA}$; $I_C=0$ | 7 | | | V |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C=4\text{A}$; $I_B=0.8\text{A}$ | | | 0.8 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C=4\text{A}$; $I_B=0.8\text{A}$ | | | 1.5 | V |
| I_{CBO} | Collector Cutoff Current | $V_{CB}=400\text{V}$; $I_E=0$ | | | 10 | μA |
| I_{EBO} | Emitter Cutoff Current | $V_{EB}=5\text{V}$; $I_C=0$ | | | 10 | μA |
| h_{FE-1} | DC Current Gain | $I_C=0.8\text{A}$; $V_{CE}=5\text{V}$ | 15 | | 50 | |
| h_{FE-2} | DC Current Gain | $I_C=4\text{A}$; $V_{CE}=5\text{V}$ | 10 | | | |
| h_{FE-3} | DC Current Gain | $I_C=10\text{mA}$; $V_{CE}=5\text{V}$ | 10 | | | |
| f_T | Current-Gain—Bandwidth Product | $I_C=0.8\text{A}$; $V_{CE}=10\text{V}$ | | 20 | | MHz |
| C_{OB} | Output Capacitance | $I_E=0$; $V_{CB}=10\text{V}$; $f_{\text{test}}=1.0\text{MHz}$ | | 80 | | pF |

Switching times

| | | | | | | |
|-----------|--------------|---|--|--|-----|---------------|
| t_{on} | Turn-on Time | $I_C=5\text{A}$; $I_{B1}=1\text{A}$; $I_{B2}=-2\text{A}$ $R_L=40\Omega$; $V_{CC}=200\text{V}$ | | | 0.5 | μs |
| t_{stg} | Storage Time | | | | 2.5 | μs |
| t_f | Fall Time | | | | 0.3 | μs |

◆ h_{FE-1} Classifications

| L | M | N |
|-------|-------|-------|
| 15-30 | 20-40 | 30-50 |