

Silicon PNP Power Transistor

2SA1741

DESCRIPTION

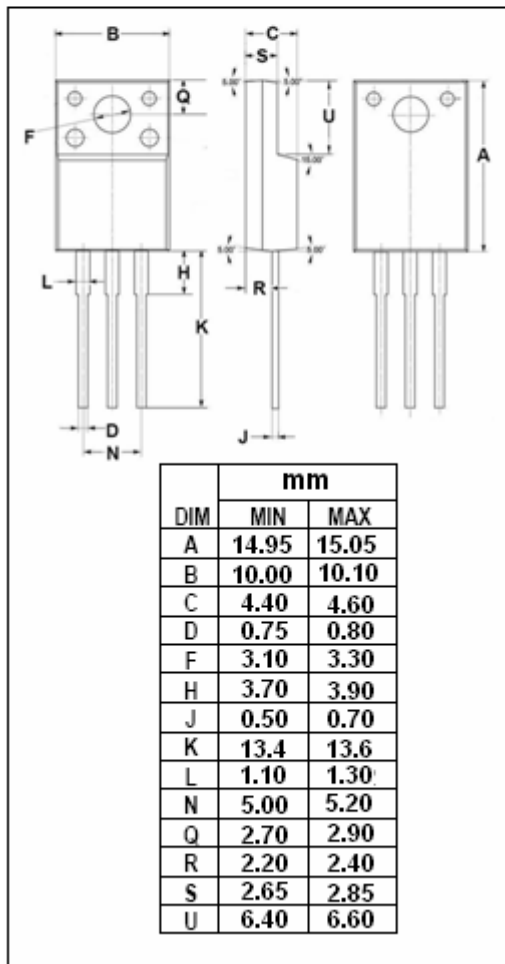
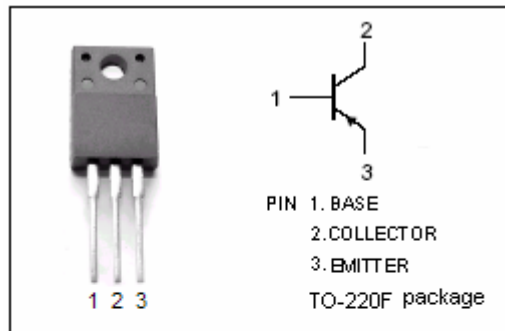
- Collector-Emitter Sustaining Voltage-
: $V_{CEO(SUS)} = -60V(\text{Min})$
- High DC Current Gain-
: $h_{FE} = 100(\text{Min}) @ (V_{CE} = -2V, I_C = -1A)$
- Low Saturation Voltage-
: $V_{CE(sat)} = -0.3V(\text{Max}) @ (I_C = -3A, I_B = -0.15A)$

APPLICATIONS

- This type of power transistor is developed for high-speed switching and features a high h_{FE} at low $V_{CE(sat)}$, which is ideal for use as a driver in DC/DC converters and actuators.

ABSOLUTE MAXIMUM RATINGS($T_a=25^\circ\text{C}$)

| SYMBOL | PARAMETER | VALUE | UNIT |
|-----------|--|---------|------------------|
| V_{CBO} | Collector-Base Voltage | -100 | V |
| V_{CEO} | Collector-Emitter Voltage | -60 | V |
| V_{EBO} | Emitter-Base Voltage | -7.0 | V |
| I_C | Collector Current-Continuous | -5.0 | A |
| I_{CM} | Collector Current-Pulse | -10 | A |
| I_B | Base Current-Continuous | -2.5 | A |
| P_T | Total Power Dissipation @ $T_C=25^\circ\text{C}$ | 25 | W |
| | Total Power Dissipation @ $T_a=25^\circ\text{C}$ | 2.0 | |
| T_J | Junction Temperature | 150 | $^\circ\text{C}$ |
| T_{stg} | Storage Temperature | -55~150 | $^\circ\text{C}$ |



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ELECTRICAL CHARACTERISTICS

T_j=25°C unless otherwise specified

| SYMBOL | PARAMETER | CONDITIONS | MIN | TYP. | MAX | UNIT |
|------------------------|--------------------------------------|--|-----|------|-------------|-----------|
| V _{CEO(SUS)} | Collector-Emitter Sustaining Voltage | I _C = -3.0A ; I _B = -0.3A, L= 1mH | -60 | | | V |
| V _{CEx(SUS)} | Collector-Emitter Sustaining Voltage | I _C = -3.0A ; I _{B1} =-I _{B2} = -0.3A, V _{BE(OFF)} =1.5V, L=180 μ H,clamped | -60 | | | V |
| V _{CE(sat)-1} | Collector-Emitter Saturation Voltage | I _C = -3A; I _B = -0.15A | | | -0.3 | V |
| V _{CE(sat)-2} | Collector-Emitter Saturation Voltage | I _C = -4A; I _B = -0.2A | | | -0.5 | V |
| V _{BE(sat)-1} | Base-Emitter Saturation Voltage | I _C = -3A; I _B = -0.15A | | | -1.2 | V |
| V _{BE(sat)-2} | Base-Emitter Saturation Voltage | I _C = -4A; I _B = -0.2A | | | -1.5 | V |
| I _{CBO} | Collector Cutoff Current | V _{CB} = -60V ; I _E =0 | | | -10 | μ A |
| I _{CER} | Collector Cutoff Current | V _{CE} = -60V ; R _{BE} = 50 Ω ,T _a =125°C | | | -1.0 | mA |
| I _{CEx} | Collector Cutoff Current | V _{CE} = -60V; V _{BE(off)} = -1.5V V _{CE} = -60V; V _{BE(off)} = -1.5V,T _a =125°C | | | -10 -1.0 | μ A mA |
| I _{EBO} | Emitter Cutoff Current | V _{EB} = -5V; I _C =0 | | | -10 | μ A |
| h _{FE-1} | DC Current Gain | I _C = -0.5A ; V _{CE} = -2V | 100 | | | |
| h _{FE-2} | DC Current Gain | I _C = -1.0A ; V _{CE} = -2V | 100 | | 400 | |
| h _{FE-3} | DC Current Gain | I _C = -3.0A ; V _{CE} = -2V | 60 | | | |
| C _{OB} | Output Capacitance | I _E =0 ; V _{CB} = -10V;f= 1.0MHz | | 130 | | pF |
| f _T | Current-Gain—Bandwidth Product | I _C =-0.5A ; V _{CE} = -10V | | 80 | | MHz |

Switching times

| | | | | | | |
|------------------|--------------|--|--|--|-----|-----|
| t _{on} | Turn-on Time | I _C = -3.0A ,R _L = 17 Ω , I _{B1} = -I _{B2} = -0.15A,V _{CC} ≈-50V | | | 0.3 | μ s |
| t _{stg} | Storage Time | | | | 1.5 | μ s |
| t _f | Fall Time | | | | 0.3 | μ s |

◆ **h_{FE-2} Classifications**

| M | L | K |
|---------|---------|---------|
| 100-200 | 150-300 | 200-400 |

