*New Jersey Semi-Conductor Products, Inc.*

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SPRINGFIELD, NEW JERSEY 07081
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TELEPHONE: (973) 376-2922
(212) 227-6005
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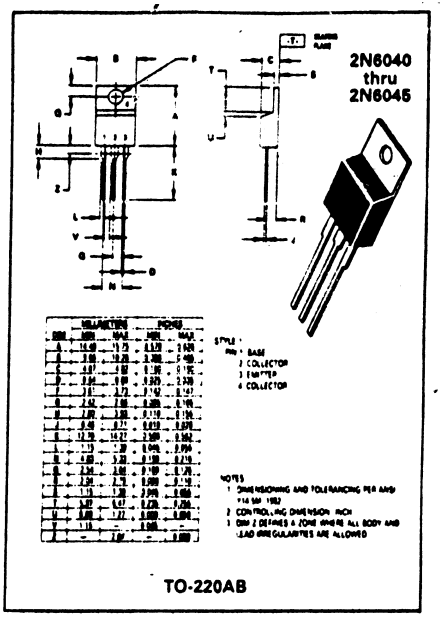
# 2N6040 thru 2N6042 PNP
# 2N6043 thru 2N6045 NPN
# MJE6040 thru MJE6041 PNP
# MJE6043 thru MJE6045 NPN




TO-220AB

*MAXIMUM RATINGS

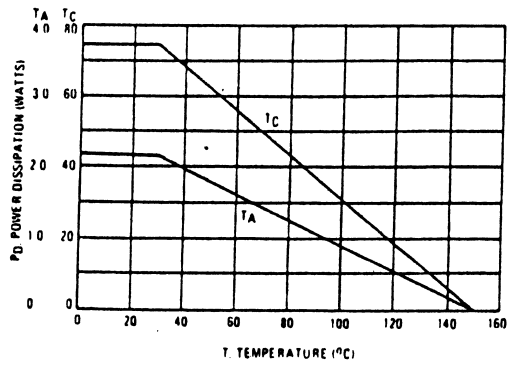
| Rating | Symbol | 2N6040 2N6043 MJE6040 MJE6043 | 2N6041 2N6044 MJE6041 MJE6044 | 2N6042 2N6045 MJE6045 | Unit |
|---|---|---|---|---|---|
| Collector-Emitter Voltage | $V_{CEO}$ | 60 | 80 | 100 | Vdc |
| Collector-Base Voltage | $V_{CB}$ | 60 | 80 | 100 | Vdc |
| Emitter-Base Voltage | $V_{EB}$ | ← 5.0 → | | | Vdc |
| Collector Current – Continuous<br>Peak | $I_C$ | ← 8.0 →<br>← 16 → | | | Adc |
| Base Current | $I_B$ | ← 120 → | | | mAdc |
| Total Power Dissipation @ $T_C$ = 25°C<br>Derate above 25°C | $P_D$ | ← 75 →<br>← 0.60 → | | | Watts<br>W/°C |
| Total Power Dissipation @ $T_A$ = 25°C<br>Derate above 25°C | $P_D$ | ← 2.2 →<br>← 0.0175 → | | | Watts<br>W/°C |
| Operating and Storage Junction, Temperature Range | $T_J$, $T_{stg}$ | ← -65 to +150 → | | | °C |

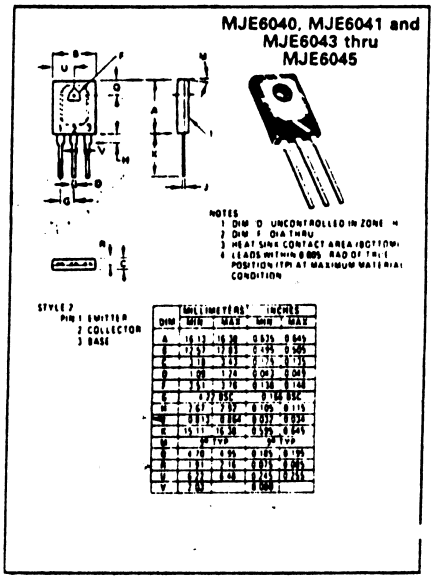
THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|---|---|---|
| Thermal Resistance, Junction to Case | $\theta_{JC}$ | 1.67 | °C/W |
| Thermal Resistance, Junction to Ambient | $\theta_{JA}$ | 57 | °C/W |

*Indicates JEDEC Registered Data

FIGURE 1 – POWER DERATING




Quality Semi-Conductors

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# 2N6040 thru 2N6042 PNP
# 2N6043 thru 2N6045 NPN
# MJE6040 thru MJE6041 PNP
# MJE6043 thru MJE6045 NPN

***ELECTRICAL CHARACTERISTICS** ($T_C$ = 25°C unless otherwise noted)

| Characteristic | | Symbol | Min | Max | Unit |
|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | |
| Collector-Emitter Sustaining Voltage ($I_C$ = 100 mAdc, $I_B$ = 0) | 2N6040, 2N6043, MJE6040, MJE6043 | $V_{CEO(sus)}$ | 60 | – | Vdc |
| | 2N6041, 2N6044, MJE6041, MJE6044 | | 80 | – | |
| | 2N6042, 2N6045, MJE6045 | | 100 | – | |
| Collector Cutoff Current | | $I_{CEO}$ | | | μA |
| ($V_{CE}$ = 60 Vdc, $I_B$ = 0) | 2N6040, 2N6043, MJE6040, MJE6043 | | – | 20 | |
| ($V_{CE}$ = 80 Vdc, $I_B$ = 0) | 2N6041, 2N6044, MJE6041, MJE6044 | | – | 20 | |
| ($V_{CE}$ = 100 Vdc, $I_B$ = 0) | 2N6042, 2N6045, MJE6045 | | – | 20 | |
| Collector Cutoff Current | | $I_{CEX}$ | | | μA |
| ($V_{CE}$ = 60 Vdc, $V_{BE(off)}$ = 1.5 Vdc) | 2N6040, 2N6043, MJE6040, MJE6043 | | – | 20 | |
| ($V_{CE}$ = 80 Vdc, $V_{BE(off)}$ = 1.5 Vdc) | 2N6041, 2N6044, MJE6041, MJE6044 | | – | 20 | |
| ($V_{CE}$ = 100 Vdc, $V_{BE(off)}$ = 1.5 Vdc) | 2N6042, 2N6045, MJE6045 | | – | 20 | |
| ($V_{CE}$ = 60 Vdc, $V_{BE(off)}$ = 1.5 Vdc, $T_C$ = 150°C) | 2N6040, 2N6043, MJE6040, MJE6043 | | – | 200 | |
| ($V_{CE}$ = 80 Vdc, $V_{BE(off)}$ = 1.5 Vdc, $T_C$ = 150°C) | 2N6041, 2N6044, MJE6041, MJE6044 | | – | 200 | |
| ($V_{CE}$ = 100 Vdc, $V_{BE(off)}$ = 1.5 Vdc, $T_C$ = 150°C) | 2N6042, 2N6045, MJE6045 | | – | 200 | |
| Collector Cutoff Current | | $I_{CBO}$ | | | μA |
| ($V_{CB}$ = 60 Vdc, $I_E$ = 0) | 2N6040, 2N6043, MJE6040, MJE6043 | | – | 20 | |
| ($V_{CB}$ = 80 Vdc, $I_E$ = 0) | 2N6041, 2N6044, MJE6041, MJE6044 | | – | 20 | |
| ($V_{CB}$ = 100 Vdc, $I_E$ = 0) | 2N6042, 2N6045, MJE6045 | | – | 20 | |
| Emitter Cutoff Current ($V_{BE}$ = 5.0 Vdc, $I_C$ = 0) | | $I_{EBO}$ | – | 2.0 | mAdc |
| **ON CHARACTERISTICS** | | | | | |
| DC Current Gain | | $h_{FE}$ | | | – |
| ($I_C$ = 4.0 Adc, $V_{CE}$ = 4.0 Vdc) | 2N6040,41, 2N6043,44, MJE6040,41, MJE6043,44 | | 1000 | 20,000 | |
| ($I_C$ = 3.0 Adc, $V_{CE}$ = 4.0 Vdc) | 2N6042, 2N6045, MJE6045 | | 1000 | 20,000 | |
| ($I_C$ = 8.0 Adc, $V_{CE}$ = 4.0 Vdc) | All Types | | 100 | – | |
| Collector-Emitter Saturation Voltage | | $V_{CE(sat)}$ | | | Vdc |
| ($I_C$ = 4.0 Adc, $I_B$ = 16 mAdc) | 2N6040,41,2N6043,44,MJE6040,41,MJE6043,44 | | – | 2.0 | |
| ($I_C$ = 3.0 Adc, $I_B$ = 12 mAdc) | 2N6042,2N6045, MJE6045 | | – | 2.0 | |
| ($I_C$ = 8.0 Adc, $I_B$ = 80 mAdc) | All Types | | – | 4.0 | |
| Base-Emitter Saturation Voltage ($I_C$ = 8.0 Adc, $I_B$ = 80 mAdc) | | $V_{BE(sat)}$ | – | 4.5 | Vdc |
| Base-Emitter On Voltage ($I_C$ = 4.0 Adc, $V_{CE}$ = 4.0 Vdc) | | $V_{BE(on)}$ | – | 2.8 | Vdc |
| **DYNAMIC CHARACTERISTICS** | | | | | |
| Small-Signal Current Gain ($I_C$ = 3.0 Adc, $V_{CE}$ = 4.0 Vdc, f = 1.0 MHz) | | $\|h_{fe}\|$ | 4.0 | – | |
| Output Capacitance ($V_{CB}$ = 10 Vdc, $I_E$ = 0, f = 0.1 MHz) | 2N6040/2N6042, MJE6040 | $C_{ob}$ | – | 300 | pF |
| | 2N6043/2N6045, MJE6043/MJE6045 | | – | 200 | |
| Small-Signal Current Gain ($I_C$ = 3.0 Adc, $V_{CE}$ = 4.0 Vdc, f = 1.0 kHz) | | $h_{fe}$ | 300 | – | – |

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