

MJ2801 NPN (SILICON)

MJ2901 PNP

COMPLEMENTARY SILICON POWER TRANSISTORS

...designed for general-purpose amplifier and switching circuit applications.

- Low Collector-Emitter Saturation Voltage –
 $V_{CE(sat)} = 1.5 \text{ Vdc (Max) @ } I_C = 8.0 \text{ Adc}$
- DC Current Gain –
 $h_{FE} = 15 \text{ (Min) @ } I_C = 8.0 \text{ Adc}$

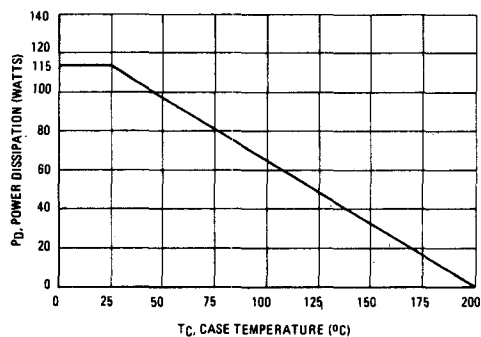
MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	40	Vdc
Collector-Base Voltage	V_{CB}	50	Vdc
Emitter-Base Voltage	V_{EB}	7.0	Vdc
Collector Current – Continuous	I_C	15	Adc
Base Current	I_B	7.0	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	115 0.667	Watts W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	$-65 \text{ to } +200$	$^\circ\text{C}$

THERMAL CHARACTERISTICS

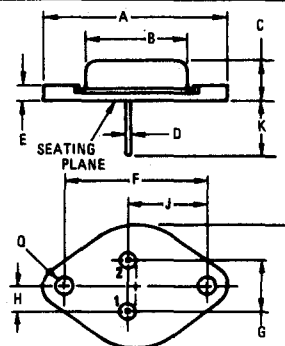
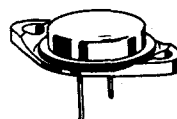
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	1.52	$^\circ\text{C/W}$

FIGURE 1 – POWER TEMPERATURE DERATING CURVE



15 AMPERE POWER TRANSISTORS COMPLEMENTARY SILICON

40 VOLTS
115 WATTS



STYLE 1:
PIN 1: BASE
2: EMITTER
CASE: COLLECTOR
NOTE:
1. DIM "Q" IS DIA.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	—	39.37	—	1.550
B	—	21.08	—	0.830
C	6.35	7.62	0.250	0.300
D	0.99	1.09	0.039	0.043
E	—	3.43	—	0.135
F	29.90	30.40	1.177	1.197
G	10.67	11.18	0.420	0.440
H	5.33	5.59	0.210	0.220
J	16.64	17.15	0.655	0.675
K	11.18	12.19	0.440	0.480
L	3.84	4.09	0.151	0.161
R	—	26.67	—	1.050

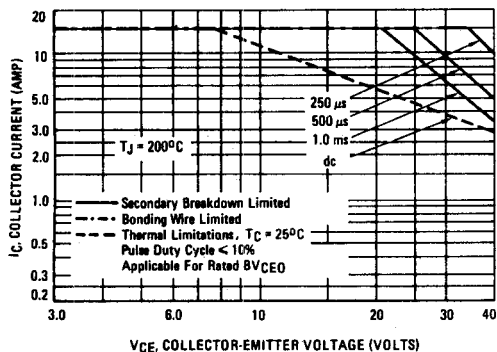
CASE 11

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage(1) ($I_C = 200\text{ mAdc}$, $I_B = 0$)	BV_{CEO}	40	—	Vdc
Collector Cutoff Current ($V_{CE} = 50\text{ Vdc}$, $V_{EB(\text{off})} = 1.5\text{ Vdc}$)	I_{CEX}	—	5.0	mA _{dc}
Collector Cutoff Current ($V_{CB} = 50\text{ Vdc}$, $I_E = 0$) ($V_{CB} = 50\text{ Vdc}$, $I_E = 0$, $T_C = 150^\circ\text{C}$)	I_{CBO}	— —	5.0 10	mA _{dc}
Emitter Cutoff Current ($V_{EB} = 7.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	10	mA _{dc}
ON CHARACTERISTICS				
DC Current Gain(1) ($I_C = 8.0\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$)	h_{FE}	15	60	—
Collector-Emitter Saturation Voltage(1) ($I_C = 8.0\text{ Adc}$, $I_B = 0.8\text{ Adc}$)	$V_{CE(\text{sat})}$	—	1.5	Vdc
Base-Emitter On Voltage(1) ($I_C = 8.0\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$)	$V_{BE(\text{on})}$	—	2.2	Vdc
DYNAMIC CHARACTERISTICS				
Current-Gain-Bandwidth Product ($I_C = 0.4\text{ Adc}$, $V_{CE} = 10\text{ Vdc}$, $f = 1.0\text{ MHz}$)	f_T	1.0	—	MHz

(1) Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2.0\%$.

FIGURE 2 — ACTIVE-REGION SAFE OPERATING AREA



The Safe Operating Area Curves indicate I_C - V_{CE} limits below which the device will not enter secondary breakdown. Collector load lines for specific circuits must fall within the applicable Safe Area to avoid causing a catastrophic failure. To insure operation below the maximum T_J , power-temperature derating must be observed for both steady state and pulse power conditions.