

MJE520^(SILICON)

MJE520K

MJE3520

PLASTIC MEDIUM-POWER NPN SILICON TRANSISTORS

... designed for use in general-purpose amplifier and switching circuits. Recommended for use in 5 to 10 Watt audio amplifiers utilizing complementary symmetry circuitry.

- DC Current Gain — $h_{FE} = 25$ (Min) @ $I_C = 1.0$ Adc
- MJE520, MJE520K and MJE3520 are Complementary with PNP MJE370, MJE370K and MJE3370
- Choice of Packages — MJE520, 25 W — Case 77 (E-C-B)
MJE3520, 25 W — Case 77 (B-C-E)
MJE520K, 40 W — Case 199

MAXIMUM RATINGS

Rating	Symbol	Value		Unit
Collector-Emitter Voltage	V_{CEO}	30		Vdc
Collector-Base Voltage	V_{CB}	30		Vdc
Emitter-Base Voltage	V_{EB}	4.0		Vdc
Collector Current — Continuous	I_C	3.0		Adc
— Peak		7.0		
Base Current — Continuous	I_B	2.0		Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	MJE520 MJE3520	MJE520K	Watts W/ $^\circ\text{C}$
		25	40	
		0.2	0.32	
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +150		$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	MJE520 MJE3520	MJE520K	Unit
Thermal Resistance, Junction to Case	θ_{JC}	5.0	3.125	$^\circ\text{C/W}$

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

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage (1) ($I_C = 100$ mAdc, $I_B = 0$)	$V_{CEO(sus)}$	30	—	Vdc
Collector-Base Cutoff Current ($V_{CB} = 30$ Vdc, $I_E = 0$)	I_{CBO}	—	100	μAdc
Emitter-Base Cutoff Current ($V_{EB} = 4.0$ Vdc, $I_C = 0$)	I_{EBO}	—	100	μAdc

ON CHARACTERISTICS

DC Current Gain (1) ($I_C = 1.0$ Adc, $V_{CE} = 1.0$ Vdc)	h_{FE}	25	—	—
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(1) Pulse Test: Pulse Width ≤ 300 μs , Duty Cycle $\leq 2.0\%$.

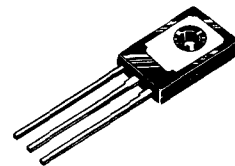
3 AMPERE POWER TRANSISTORS

NPN SILICON

30 VOLTS
25 and 40 WATTS

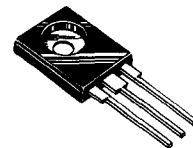
MJE520
Style 1

MJE3520
Style 3



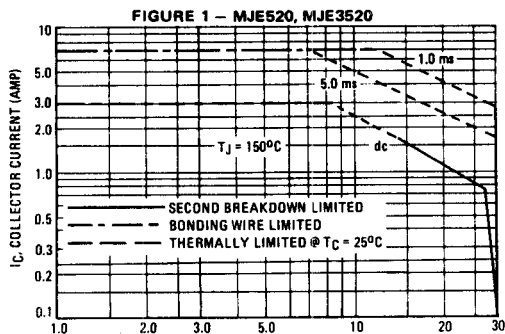
CASE 77-03

MJE520K



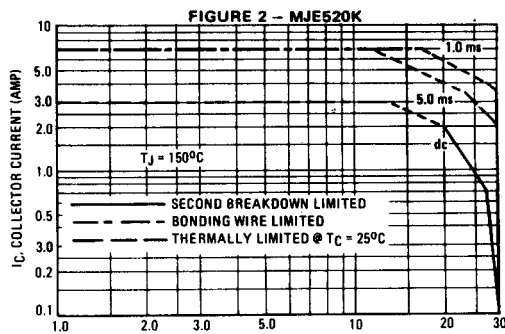
CASE 199-04

ACTIVE-REGION SAFE OPERATING AREA



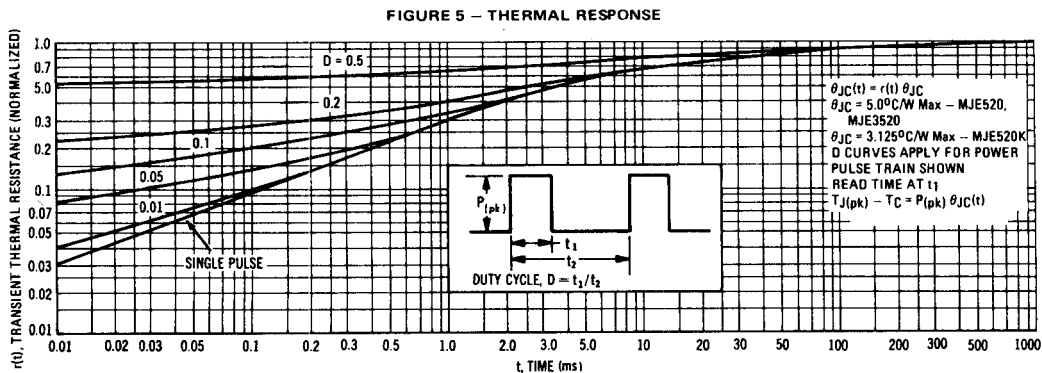
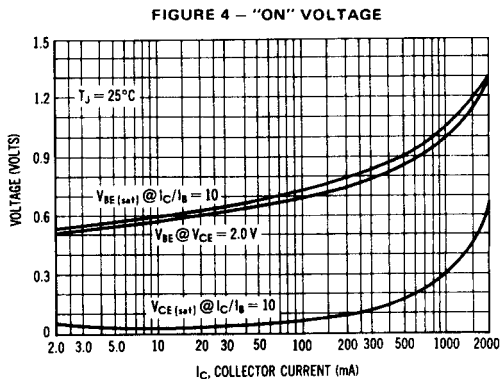
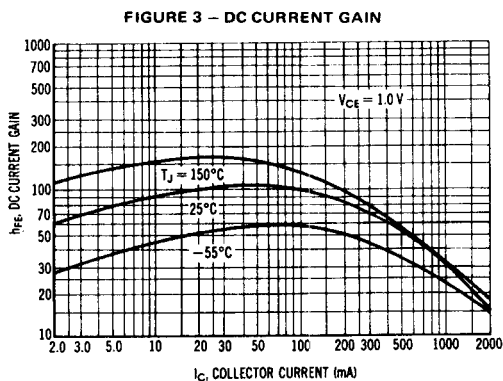
V_{CE} , COLLECTOR-EMITTER VOLTAGE (VOLTS)

There are two limitations on the power handling ability of a transistor: average junction temperature and second breakdown. Safe operating area curves indicate $I_C - V_{CE}$ limits of the transistor that must be observed for reliable operation; i.e., the transistor must not be subjected to greater dissipation than the curves indicate.



V_{CE} , COLLECTOR-EMITTER VOLTAGE (VOLTS)

The data of Figures 1 and 2 based on $T_{J(pk)} = 150^\circ\text{C}$; T_C is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $(T_{J(pk)} \leq 150^\circ\text{C})$. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown. (See AN-415)



MJE520, MJE520K, MJE3520 (continued)

