

2N6040 thru 2N6042 PNP (SILICON)
2N6043 thru 2N6045 NPN
MJE6040 thru MJE6042 PNP
MJE6043 thru MJE6045 NPN

**PLASTIC MEDIUM-POWER
COMPLEMENTARY SILICON TRANSISTORS**

... designed for general-purpose amplifier and low-speed switching applications.

- High DC Current Gain –
 $h_{FE} = 2500$ (Typ) @ $I_C = 4.0$ Adc
- Collector-Emitter Sustaining Voltage – @ 100 mA dc (1)
 $V_{CE(sus)} = 60$ Vdc (Min) – 2N6040, 2N6043
= 80 Vdc (Min) – 2N6041, 2N6044
= 100 Vdc (Min) – 2N6042, 2N6045
- Low Collector-Emitter Saturation Voltage – (1)
 $V_{CE(sat)} = 2.0$ Vdc (Max) @ $I_C = 4.0$ Adc – 2N6040, 41, 2N6043, 44
= 2.0 Vdc (Max) @ $I_C = 3.0$ Adc – 2N6042, 2N6045
- Monolithic Construction with Built-In Base-Emitter Shunt Resistors
- Thermopad High Efficiency Compact Package

(1) Applies to corresponding in-house part numbers also.

***MAXIMUM RATINGS**

Rating	Symbol	2N6040	2N6041	2N6042	Unit
		2N6043	2N6044	2N6045	
Collector-Emitter Voltage	V_{CE}	60	80	100	Vdc
Collector-Base Voltage	V_{CB}	60	80	100	Vdc
Emitter-Base Voltage	V_{EB}	← 5.0 →			Vdc
Collector Current	I_C	← 8.0 →			A dc
Peak		← 16 →			
Base Current	I_B	← 120 →			mA dc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$	P_D	← 75 →			Watts
Derate above 25°C		← 0.60 →			
Total Device Dissipation @ $T_A = 25^\circ\text{C}$	P_D	← 2.2 →			Watts
Derate above 25°C		← 0.0175 →			
Operating and Storage Junction Temperature Range	T_J, T_{stg}	← -65 to +150 →			$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	167	$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient	θ_{JA}	57	$^\circ\text{C/W}$

*Indicates JEDEC Registered Data

**DARLINGTON
8 AMPERE
COMPLEMENTARY SILICON
POWER TRANSISTORS**

**60-80-100 VOLTS
75 WATTS**

2N6040 thru 2N6045



PIN 1. BASE
2. COLLECTOR
3. EMITTER

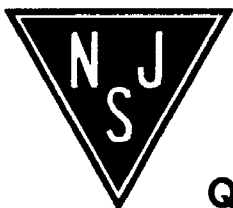
CASE 199.04

MJE6040 thru MJE6045



PIN 1. EMITTER
2. COLLECTOR
3. BASE

TO127



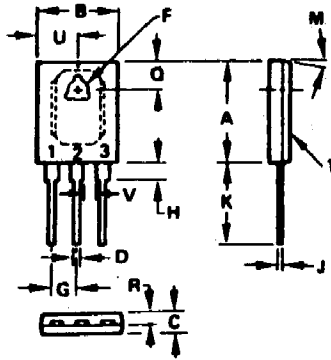
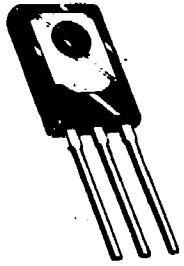
2N6040 thru 2N6042 PNP (continued)
2N6043 thru 2N6045 NPN
MJE6040 thru MJE6042 PNP
MJE6043 thru MJE6045 NPN

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage ($I_C = 100\text{ mAdc}$, $I_B = 0$)	$V_{CE(sus)}$	60 80 100	- - -	Vdc
Collector Cutoff Current ($V_{CE} = 30\text{ Vdc}$, $I_B = 0$) ($V_{CE} = 40\text{ Vdc}$, $I_B = 0$) ($V_{CE} = 50\text{ Vdc}$, $I_B = 0$)	I_{CEO}	- - -	0.5 0.5 0.5	mAdc
Collector Cutoff Current ($V_{CE} = 60\text{ Vdc}$, $V_{BE(off)} = 1.5\text{ Vdc}$) ($V_{CE} = 80\text{ Vdc}$, $V_{BE(off)} = 1.5\text{ Vdc}$) ($V_{CE} = 100\text{ Vdc}$, $V_{BE(off)} = 1.5\text{ Vdc}$) ($V_{CE} = 60\text{ Vdc}$, $V_{BE(off)} = 1.5\text{ Vdc}$, $T_C = 125^\circ\text{C}$) ($V_{CE} = 80\text{ Vdc}$, $V_{BE(off)} = 1.5\text{ Vdc}$, $T_C = 125^\circ\text{C}$) ($V_{CE} = 100\text{ Vdc}$, $V_{BE(off)} = 1.5\text{ Vdc}$, $T_C = 125^\circ\text{C}$)	I_{CEX}	- - - - - -	0.5 0.5 0.5 5.0 5.0 5.0	mAdc
Collector Cutoff Current ($V_{CB} = 60\text{ Vdc}$, $I_E = 0$) ($V_{CB} = 80\text{ Vdc}$, $I_E = 0$) ($V_{CB} = 100\text{ Vdc}$, $I_E = 0$)	I_{CBO}	- - -	0.5 0.5 0.5	mAdc
Emitter Cutoff Current ($V_{BE} = 5.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}	-	2.0	mAdc
ON CHARACTERISTICS				
DC Current Gain ($I_C = 4.0\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$) ($I_C = 3.0\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$) ($I_C = 8.0\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$) All Types	h_{FE}	1000 1000 100	20,000 20,000	
Collector-Emitter Saturation Voltage ($I_C = 4.0\text{ Adc}$, $I_B = 16\text{ mAdc}$) ($I_C = 3.0\text{ Adc}$, $I_B = 12\text{ mAdc}$) ($I_C = 8.0\text{ Adc}$, $I_B = 80\text{ mAdc}$) All Types	$V_{CE(sat)}$	- - -	2.0 2.0 4.0	Vdc
Base-Emitter Saturation Voltage ($I_C = 8.0\text{ Adc}$, $I_B = 80\text{ mAdc}$)	$V_{BE(sat)}$	-	4.5	Vdc
Base-Emitter On Voltage ($I_C = 4.0\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$)	$V_{BE(on)}$	-	2.8	Vdc
DYNAMIC CHARACTERISTICS				
Current Gain - Bandwidth Product ($I_C = 3.0\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$, $f = 1.0\text{ MHz}$)	$ h_{fe} $	4.0	-	MHz
Output Capacitance ($V_{CB} = 10\text{ Vdc}$, $I_E = 0.1 - 0.1\text{ MHz}$)	C_{ob}	-	300 200	pF
Small-Signal Current Gain ($I_C = 3.0\text{ Adc}$, $V_{CE} = 4.0\text{ Vdc}$, $f = 1.0\text{ kHz}$)	h_{fe}	300	-	

*Indicates JEDEC Registered Data

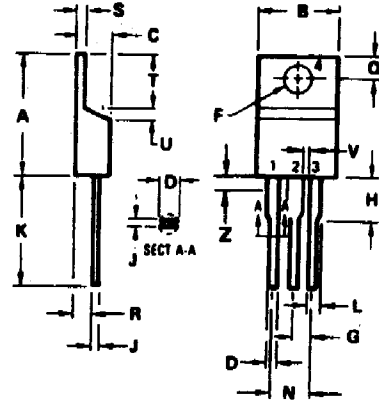
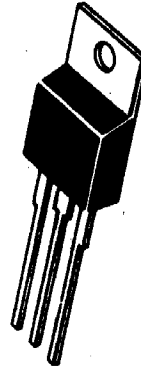
* Choice of Packages: MJE6040 - MJE6045 (TO-127)
MJE6040T - MJE6045T (TO220AB)



STYLE 2
PIN 1. EMITTER
2. COLLECTOR
3. BASE

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	16.13	16.38	0.635	0.645
B	12.57	12.83	0.495	0.505
C	3.18	3.43	0.125	0.135
D	1.09	1.24	0.043	0.049
F	3.51	3.76	0.138	0.148
G	4.22 BSC		0.166 BSC	
H	2.67	2.92	0.105	0.115
J	0.813	0.864	0.032	0.034
K	15.11	16.38	0.595	0.645
M	9° TYP		9° TYP	
Q	4.70	4.95	0.185	0.195
R	1.91	2.16	0.075	0.085
U	6.22	6.48	0.245	0.255
V	2.03	-	0.080	-

TO-225AB



STYLE 1
PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	14.60	15.75	0.575	0.620
B	9.65	10.29	0.380	0.405
C	4.06	4.82	0.160	0.190
D	0.64	0.89	0.025	0.035
F	3.61	3.73	0.142	0.147
G	2.41	2.67	0.095	0.105
H	2.79	3.93	0.110	0.155
J	0.38	0.56	0.014	0.022
K	12.70	14.27	0.500	0.562
L	1.14	1.39	0.045	0.055
M	4.83	5.33	0.190	0.210
Q	2.64	3.04	0.100	0.120
R	2.04	2.70	0.080	0.110
S	1.14	1.39	0.045	0.055
T	5.07	6.48	0.235	0.255
U	0.00	1.27	0.000	0.050
V	1.14	-	0.045	-
Z	-	2.03	-	0.080

NOTES

1. DIMENSION H APPLIES TO ALL LEADS
2. DIMENSION L APPLIES TO LEADS 1 AND 3
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED
4. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982
5. CONTROLLING DIMENSION INCH

TO-220AB