



**PRODUCT NAME :** 2N6043 NPN Medium Power Darlington Transistor

**PRICE :** Rs 20.00

**SKU :** RM2102



With this product you are purchasing a genuine component. Copyrights by Robomart.com

## DESCRIPTION

## Features

- Collector-Emitter Volt ( $V_{ce0}$ ): 60V
- Collector-Base Volt ( $V_{cb0}$ ): 60V
- Collector Current ( $I_c$ ): 8.0A
- $h_{fe}$ : 1,000-20,000 @ 4.0A
- Power Dissipation ( $P_{tot}$ ): 75W
- Type: PNP

**MOTOROLA**  
**SEMICONDUCTOR TECHNICAL DATA**

Order this document  
 by 2N6040/D

**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 mAdc —  
 $V_{CE(sus)} = 60$  Vdc (Min) — 2N6040, 2N6043  
 $= 80$  Vdc (Min) — 2N6041, 2N6044  
 $= 100$  Vdc (Min) — 2N6042, 2N6045
- Low Collector-Emitter Saturation Voltage —  
 $V_{CE(sat)} = 2.0$  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

**MAXIMUM RATINGS (1)**

Rating	Symbol	2N6040 2N6043	2N6041 2N6044	2N6042 2N6045	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 Peak	$I_C$	8.0 16			Adc
Base Current	$I_B$	120			mAdc
Total Power Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	75 0.60			Watts W/ $^\circ\text{C}$
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	$\theta_{JC}$	1.67	$^\circ\text{C/W}$
Thermal Resistance, Junction to Ambient	$\theta_{JA}$	57	$^\circ\text{C/W}$

(1) Indicates JEDEC Registered Data.

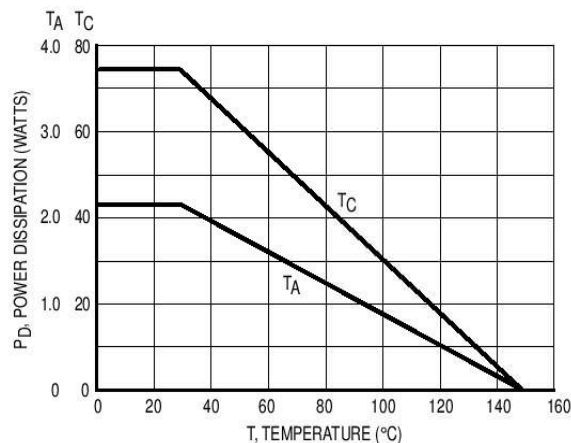


Figure 1. Power Derating

Preferred devices are Motorola recommended choices for future use and best overall value.

REV 1

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**PNP  
2N6040**

thru

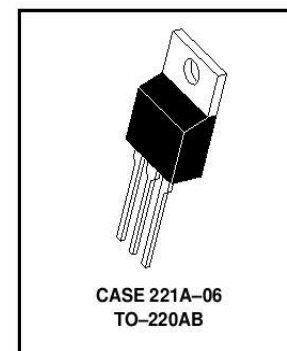
**2N6042\***  
**NPN  
2N6043**

thru

**2N6045\***

\*Motorola Preferred Device

**DARLINGTON  
8 AMPERE  
COMPLEMENTARY  
SILICON  
POWER TRANSISTORS  
60-80-100 VOLTS  
75 WATTS**

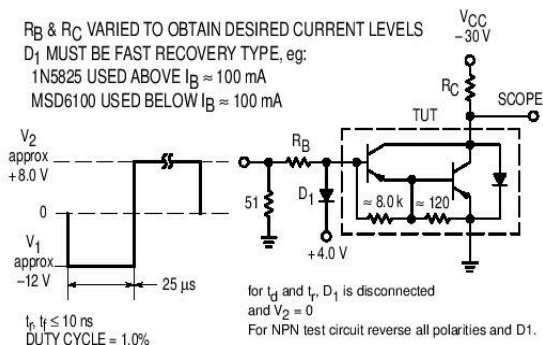


**2N6040 thru 2N6042 2N6043 thru 2N6045**

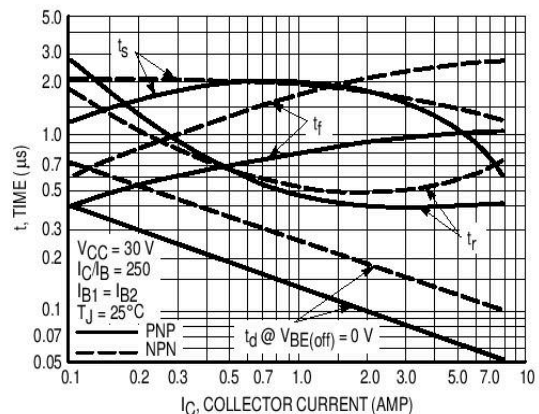
\*ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$  unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Collector-Emitter Sustaining Voltage ( $I_C = 100\text{ mA dc}$ , $I_B = 0$ )	$V_{CE(sus)}$	60 80 100	— — —	Vdc
Collector Cutoff Current ( $V_{CE} = 60\text{ Vdc}$ , $I_B = 0$ ) ( $V_{CE} = 80\text{ Vdc}$ , $I_B = 0$ ) ( $V_{CE} = 100\text{ Vdc}$ , $I_B = 0$ )	$I_{CEO}$	— — —	20 20 20	$\mu\text{A}$
Collector Cutoff Current ( $V_{CE} = 60\text{ Vdc}$ , $V_{BE(off)} = 1.5\text{ Vdc}$ ) ( $V_{CE} = 80\text{ Vdc}$ , $V_{BE(off)} = 1.5\text{ Vdc}$ ) ( $V_{CE} = 100\text{ Vdc}$ , $V_{BE(off)} = 1.5\text{ Vdc}$ ) ( $V_{CE} = 60\text{ Vdc}$ , $V_{BE(off)} = 1.5\text{ Vdc}$ , $T_C = 150^\circ\text{C}$ ) ( $V_{CE} = 80\text{ Vdc}$ , $V_{BE(off)} = 1.5\text{ Vdc}$ , $T_C = 150^\circ\text{C}$ ) ( $V_{CE} = 100\text{ Vdc}$ , $V_{BE(off)} = 1.5\text{ Vdc}$ , $T_C = 150^\circ\text{C}$ )	$I_{CEX}$	— — — — — —	20 20 20 200 200 200	$\mu\text{A}$
Collector Cutoff Current ( $V_{CB} = 60\text{ Vdc}$ , $I_E = 0$ ) ( $V_{CB} = 80\text{ Vdc}$ , $I_E = 0$ ) ( $V_{CB} = 100\text{ Vdc}$ , $I_E = 0$ )	$I_{CBO}$	— — —	20 20 20	$\mu\text{A}$
Emitter Cutoff Current ( $V_{BE} = 5.0\text{ Vdc}$ , $I_C = 0$ )	$I_{EBO}$	—	2.0	mAdc
<b>ON CHARACTERISTICS</b>				
DC Current Gain ( $I_C = 4.0\text{ Adc}$ , $V_{CE} = 4.0\text{ Vdc}$ ) ( $I_C = 3.0\text{ Adc}$ , $V_{CE} = 4.0\text{ Vdc}$ ) ( $I_C = 8.0\text{ Adc}$ , $V_{CE} = 4.0\text{ Vdc}$ )	$h_{FE}$	1000 1000 100	20,000 20,000 —	—
Collector-Emitter Saturation Voltage ( $I_C = 4.0\text{ Adc}$ , $I_B = 16\text{ mAdc}$ ) ( $I_C = 3.0\text{ Adc}$ , $I_B = 12\text{ mAdc}$ ) ( $I_C = 8.0\text{ Adc}$ , $I_B = 80\text{ Adc}$ )	$V_{CE(sat)}$	— — —	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
<b>DYNAMIC CHARACTERISTICS</b>				
Small Signal Current Gain ( $I_C = 3.0\text{ Adc}$ , $V_{CE} = 4.0\text{ Vdc}$ , $f = 1.0\text{ MHz}$ )	$ h_{fe} $	4.0	—	—
Output Capacitance ( $V_{CB} = 10\text{ Vdc}$ , $I_E = 0$ , $f = 0.1\text{ MHz}$ )	$C_{ob}$	—	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.



**Figure 2. Switching Times Equivalent Circuit**



**Figure 3. Switching Times**

