DIGITRON™ Semiconductors

High-reliability discrete products
and engineering services since 1977

2N4026-2N4033

PNP SILICON MEDIUM POWER TRANSISTORS

FEATURES:

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available Non-RoHS (standard) or RoHS compliant (add PBF suffix).

MAXIMUM RATINGS

Rating	Symbol	2N4026, 2N4028 2N4030, 2N4032	2N4027, 2N4029 2N4031, 2N4033	Unit
Collector emitter voltage [1]	V_{CEO}	60	80	V
Collector base voltage	V_{CBO}	60	80	V
Emitter base voltage	V_{EBO}	5.0	5.0	V
Rating	**Symbol**	**2N4026-2N4029**	**2N4030-2N4033**	**Unit**
Collector current – continuous	I_C	1.0	1.0	A
Total device dissipation @ T_A = 25°C **Derate above 25°C**	P_D	0.5 2.85	1.25 7.15	W mW/°C
Total device dissipation @ T_C = 25°C **Derate above 25°C**	P_D	2.0 11.4	7.0 40	W mW/°C
Operating and storage temperature range	T_J, T_{stg}	-65 to +200		°C
Lead or terminal temperature [2]	T_L	300		°C
Thermal resistance, junction to case	$R_{\Theta JC}$	40	20	°C/W
Thermal resistance, junction to ambient	$R_{\Theta JA}$	280	140	°C/W

Note 1: Applicable 0 to 10mA.
Note 2: Measured at a distance not less than 1/16th from seated surface for 60 seconds.

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-emitter breakdown voltage					
I_C = 10mA	2N4026,28,30,32	$V_{(BR)CEO}$	-	60	Volts
	2N4027,29,31,33		-	80	
Collector-base breakdown voltage					
I_C = 10µA	2N4026,28,30,32	$V_{(BR)CBO}$	-	60	Volts
	2N4027,29,31,33		-	80	
Emitter-base breakdown voltage					
I_E = 10µA		$V_{(BR)EBO}$	-	5.0	Volts
Collector cutoff current					
V_{CB} = 50V	2N4026,28,30,32		-	50	nA
V_{CB} = 60V	2N4027,29,31,33	I_{CBO}	-	50	
V_{CB} = 50V, T_A = 150°C	2N4026,28,30,32		-	50	µA
V_{CB} = 60V, T_A = 150°C	2N4027,29,31,33		-	50	
Emitter cutoff current					
V_{EB} = 5.0V		I_{EBO}	-	10	µA

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ELECTRICAL CHARACTERISTICS

Characteristic		Symbol	Min	Max	Unit
ON CHARACTERISTICS					
DC current gain					
I_C = 100mA, V_{CE} = 5.0V @ -55°C	2N4026,27,30,31		15	-	
	2N4028,29,32,33		40	-	
I_C = 100µA, V_{CE} = 5.0V	2N4026,27,30,31		30	-	
	2N4028,29,32,33		75	-	
I_C = 100mA, V_{CE} = 5.0V	2N4026,27,30,31		40	120	
	2N4028,29,32,33	h_{FE}	100	300	-
I_C = 500mA, V_{CE} = 5.0V	2N4026,27,30,31		25	-	
	2N4028,29,32,33		70	-	
I_C = 1.0A, V_{CE} = 5.0V	2N4026, 30		15	-	
	2N4027, 31		10	-	
I_C = 1.0A, V_{CE} = 5.0V	2N4028, 32		40	-	
	2N4029, 33		25	-	
Collector-emitter saturation voltage					
I_C = 150mA, I_B = 15mA		$V_{CE(sat)}$	-	0.15	Volts
I_C = 500mA, I_B = 50mA			-	0.15	
I_C = 1.0A, I_B = 100mA	2N4026,28,30,32		-	1.0	
Base-emitter saturation voltage					
I_C = 150mA, I_B = 15mA		$V_{BE(sat)}$	-	0.9	Volts
Base-emitter on voltage					
I_C = 1.0A, V_{CE} = 1.0V	2N4026,28,30,32	$V_{BE(on)}$	-	1.2	Volts
I_C = 500mA, V_{CE} = 0.5V			-	1.1	
SMALL SIGNAL CHARACTERISTICS					
Output capacitance					
V_{CE} = 10V, f = 1.0MHz		C_{obo}	-	20	pF
Input capacitance					
V_{EB} = 0.5V, f = 1.0MHz		C_{ibo}	-	110	pF
Small signal current gain					
I_C = 50mA, V_{CE} = 10V, f = 100MHz		h_{fe}	1.0	4.0	-
SWITCHING CHARACTERISTICS					
Storage time					
I_C = 500mA, I_{B1} = I_{B2} = 50mA		t_s	-	350	ns
Turn-on time					
I_C = 500mA, I_{B1} = 50mA		t_{on}	-	100	ns
Turn-off time					
I_C = 500mA, I_{B1} = I_{B2} = 50mA		t_{off}	-	50	ns

Pulse width = 300µs, duty cycle 1%.

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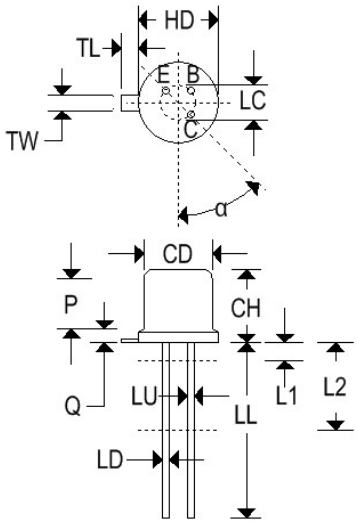
MECHANICAL CHARACTERISTICS

Case	TO-18 (2N4026-2N4029)
Marking	Alpha-numeric
Pin out	See below



Dim	TO-18			
	Inches		Millimeters	
	Min	Max	Min	Max
CD	0.178	0.195	4.520	4.950
CH	0.170	0.210	4.320	5.330
HD	0.209	0.230	5.310	5.840
LC	0.100 TP		2.540 TP	
LD	0.016	0.021	0.410	0.530
LL	0.500	0.750	12.700	19.050
LU	0.016	0.019	0.410	0.480
L_1	-	0.050	-	1.270
L_2	0.250	-	6.350	-
P	0.100	-	2.540	-
Q	-	0.040	-	1.020
TL	0.028	0.048	0.710	1.220
TW	0.036	0.046	0.910	1.170
α	45°TP		45°TP	

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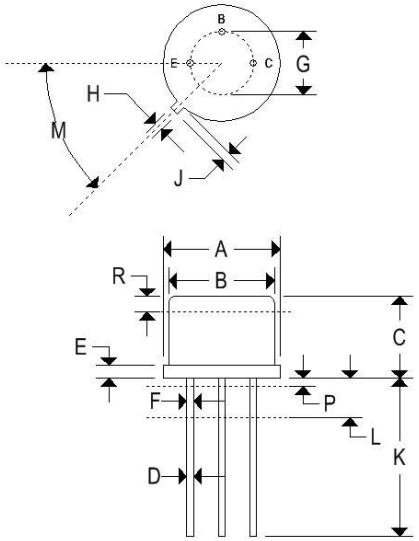
MECHANICAL CHARACTERISTICS

Case	TO-39 (2N4030-2N4033)
Marking	Alpha-numeric
Pin out	See below



Dim	TO-39			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.350	0.370	8.890	9.400
B	0.316	0.335	6.000	6.510
C	0.240	0.260	6.100	6.600
D	0.016	0.021	0.406	0.533
E	0.009	0.125	0.228	3.180
F	0.016	0.018	0.406	0.403
G	0.190	0.210	4.800	5.330
H	0.028	0.034	0.711	0.884
J	0.028	0.040	0.690	1.020
K	0.500	-	12.700	-
L	0.250	-	6.350	-
M	45° NOM		45° NOM	
P	-	0.050	-	1.270
R	0.100	-	2.540	-