

PNP POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/441

DEVICES

2N3740 2N3741

LEVELS

**JAN
 JANTX
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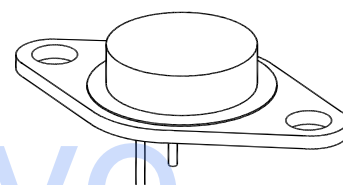
ABSOLUTE MAXIMUM RATINGS ($T_C = +25^\circ\text{C}$ unless otherwise noted)

Parameters / Test Conditions	Symbol	2N3740	2N3741	Unit
Collector-Emitter Voltage	V_{CEO}	60	80	Vdc
Collector-Base Voltage	V_{CBO}	60	80	Vdc
Emitter-Base Voltage	V_{EBO}	7.0		Vdc
Base Current	I_B	2.0		Adc
Collector Current	I_C	4.0		Adc
Total Power Dissipation @ $T_A = +25^\circ\text{C}$ ⁽¹⁾ @ $T_C = +100^\circ\text{C}$	P_T	25 14		W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		$^\circ\text{C}$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	7.0		$^\circ\text{C}/\text{W}$

Note: (1) Derate linearly @ 143 mW/ $^\circ\text{C}$ for $T_C > +25^\circ\text{C}$

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

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage $I_C = 100\text{mAdc}$	$V_{(BR)CEO}$	60 80		Vdc
Collector-Emitter Cutoff Current $V_{CE} = 40\text{Vdc}$ $V_{CE} = 60\text{Vdc}$	I_{CEO}		10 10	μAdc
Collector-Emitter Cutoff Current $V_{CE} = 60\text{Vdc}, V_{BE} = 1.5\text{Vdc}$ $V_{CE} = 80\text{Vdc}, V_{BE} = 1.5\text{Vdc}$	I_{CEX}		300 300	ηAdc
Collector-Base Cutoff Current $V_{CB} = 60\text{Vdc}$ $V_{CB} = 80\text{Vdc}$	I_{CBO}		100 100	ηAdc
Emitter-Base Cutoff Current $V_{EB} = 7.0\text{Vdc}$	I_{EBO}		100	ηAdc



TO-66 (TO-213AA)

* See Appendix A for Package Outline

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

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS ⁽²⁾				
Forward-Current Transfer Ratio $I_C = 100\text{mA dc}$, $V_{CE} = 1.0\text{V dc}$ $I_C = 250\text{mA dc}$, $V_{CE} = 1.0\text{V dc}$ $I_C = 500\text{mA dc}$, $V_{CE} = 1.0\text{V dc}$ $I_C = 1.0\text{A dc}$, $V_{CE} = 1.0\text{V dc}$ $I_C = 4.0\text{A dc}$, $V_{CE} = 5.0\text{V dc}$	h_{FE}	40 30 20 10 3.0	120	
Collector-Emitter Saturation Voltage $I_C = 250\text{mA dc}$, $I_B = 25\text{mA dc}$ $I_C = 1.0\text{A dc}$, $I_B = 125\text{mA dc}$	$V_{CE(sat)}$		0.4 0.6	Vdc
Base-Emitter Voltage $I_C = 250\text{mA dc}$, $V_{CE} = 1.0\text{V dc}$	$V_{BE(on)}$		1.0	Vdc

DYNAMIC CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 100\text{mA dc}$, $V_{CE} = 10\text{V dc}$, $f = 5.0\text{MHz}$	$ h_{fe} $	1.0	12	
Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 50\text{mA dc}$, $V_{CE} = 10\text{V dc}$, $f = 1.0\text{kHz}$	h_{fe}	25	250	
Output Capacitance $V_{CB} = 10\text{V dc}$, $I_E = 0$, $100\text{kHz} \leq f \leq 1.0\text{MHz}$	C_{obo}		100	pF

SWITCHING CHARACTERISTICS

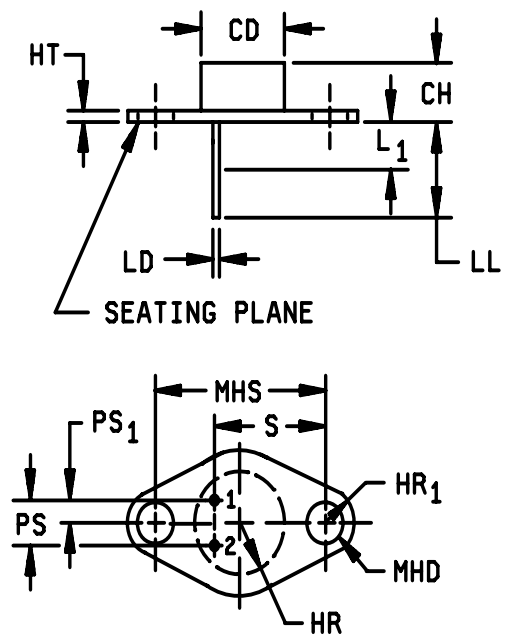
Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Turn-On Time $V_{CC} = 30\text{V dc}$; $I_C = 1.0\text{A dc}$; $I_B = 0.1\text{A dc}$	t_{on}		400	μs
Turn-Off Time $V_{CC} = 30\text{V dc}$; $I_C = 1.0\text{A dc}$; $I_{B1} = I_{B2} = 0.1\text{A dc}$	t_{off}		1.0	μs

SAFE OPERATING AREA

DC Tests	
$T_C = +25^\circ\text{C}$, 1 Cycle, $t = 1.0\text{s}$	
Test 1	
$V_{CE} = 6.25\text{V dc}$, $I_C = 4.0\text{A dc}$	
Test 2	
$V_{CE} = 20\text{V dc}$, $I_C = 1.25\text{A dc}$	
Test 3	
$V_{CE} = 50\text{V dc}$, $I_C = 150\text{mA dc}$	2N3740
$V_{CE} = 65\text{V dc}$, $I_C = 150\text{mA dc}$	2N3741

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

PACKAGE DIMENSIONS



Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD		.620		15.75	9
CH	.250	.340	6.35	8.64	
HT	.050	.075	1.27	1.91	
HR		.350		8.89	
HR ₁	.115	.145	2.92	3.68	5
LD	.028	.034	0.71	0.86	4, 8, 9
LL	.360	.500	9.14	12.70	4, 8
L ₁		.050		1.27	4, 8
MHD	.142	.152	3.61	3.86	6, 9
MHS	.958	.962	24.33	24.43	
PS	.190	.210	4.83	5.33	3
PS ₁	.093	.107	2.36	2.72	3
S	.570	.590	14.48	14.99	3

NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. These dimensions should be measured at points .050 to .055 inch (1.27 to 1.40 mm) below seating plane. When gauge is not used, measurement will be made at seating plane.
4. Both terminals.
5. At both ends.
6. Two holes.
7. The collector shall be electrically connected to the case.
8. LD applies between L1 and LL. Lead diameter shall not exceed twice LD within L1.
9. In accordance with ASME Y14.5M, diameters are equivalent to ϕ symbology.
10. Lead 1 is the emitter, lead 2 is the base, collector is the case.

FIGURE 1. Physical dimensions, TO-66 (2N3740, 2N3741)