

NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/537

Devices

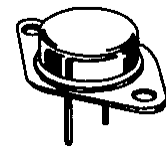
2N6674 2N6675 2N6689 2N6690

Qualified Level

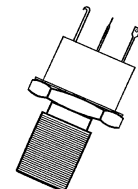
JAN
JANTX
JANTXV

MAXIMUM RATINGS

Ratings	Symbol	2N6674 2N6689	2N6675 2N6690	Unit
Collector-Emitter Voltage	V_{CEO}	300	400	Vdc
Collector-Base Voltage	V_{CBO}	450	650	Vdc
Collector-Base Voltage	V_{CEX}	450	650	Vdc
Emitter-Base Voltage	V_{EBO}	7.0		Vdc
Base Current	I_B	5.0		Adc
Collector Current	I_C	15		Adc
		2N6674 2N6675	2N6689 2N6690	
Total Power Dissipation	@ $T_A = +25^{\circ}\text{C}$	6.0 ⁽²⁾	3.0 ⁽³⁾	W
	@ $T_C = +25^{\circ}\text{C}$ ⁽¹⁾	175	175	W
Operating & Storage Temperature Range	T_{op}, T_{stg}	-65 to +200		$^{\circ}\text{C}$



2N6674, 2N6675
TO-3 (TO-204AA)*



2N6689, 2N6690
TO-61*

* See Appendix A for Package Outline

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.0	$^{\circ}\text{C}/\text{W}$

- 1) Derate linearly 1.0 W/ $^{\circ}\text{C}$ for $T_C > 25^{\circ}\text{C}$
- 2) Derate linearly 34.2 mW/ $^{\circ}\text{C}$ for $T_A > 25^{\circ}\text{C}$
- 3) Derate linearly 17.1 mW/ $^{\circ}\text{C}$ for $T_A > 25^{\circ}\text{C}$

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

Characteristics	Symbol	Min.	Max.	Unit
-----------------	--------	------	------	------

OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 200 \text{ mAdc}$	2N6674, 2N6689 2N6675, 2N6690	$V_{(BR)CEO}$	300 400	Vdc
Collector-Emitter Cutoff Current $V_{CE} = 450 \text{ Vdc}, V_{BE} = -1.5 \text{ Vdc}$ $V_{CE} = 650 \text{ Vdc}, V_{BE} = -1.5 \text{ Vdc}$	2N6674, 2N6689 2N6675, 2N6690	I_{CEX}	0.1 0.1	mAdc

2N6674, 2N6675, 2N6689, 2N6690 JAN SERIES

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
Emitter-Base Cutoff Current $V_{EB} = 7.0 \text{ Vdc}$	I_{EBO}		2.0	mAdc
Collector-Base Cutoff Current $V_{CB} = 450 \text{ Vdc}$ $V_{CB} = 650 \text{ Vdc}$	I_{CBO}	2N6674, 2N6689 2N6675, 2N6690	1.0 1.0	mAdc

ON CHARACTERISTICS ⁽⁴⁾

Forward-Current Transfer Ratio $I_C = 1 \text{ Adc}; V_{CE} = 3.0 \text{ Vdc}$ $I_C = 10 \text{ Adc}; V_{CE} = 2.0 \text{ Vdc}$	h_{FE}	15 8	40 20	
Collector-Emitter Saturation Voltage $I_C = 10 \text{ Adc}; I_B = 2 \text{ Adc}$ $I_C = 15 \text{ Adc}; I_B = 5 \text{ Adc}$	$V_{CE(sat)}$		1.0 5.0	Vdc
Base-Emitter Saturation Voltage $I_C = 10 \text{ Adc}; I_B = 2 \text{ Adc}$	$V_{BE(sat)}$		1.5	Vdc

DYNAMIC CHARACTERISTICS

Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 1.0 \text{ Adc}, V_{CE} = 10 \text{ Vdc}, f = 5 \text{ MHz}$	$ h_{fe} $	3.0	10	
Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	C_{obo}	150	500	pF

SWITCHING CHARACTERISTICS

Delay Time	See Figure 3 of MIL-PRF-19500/537	t_d		0.1	μs
Rise Time		t_r		0.6	μs
Storage Time		t_s		2.5	μs
Fall Time		t_f		0.5	μs
Cross-Over Time		t_c		0.5	μs

SAFE OPERATING AREA

DC Tests (continuous dc)	
$T_C = +25^\circ\text{C}$, power application time = 1.0 s; 1 Cycle, (See Figure 4 of MIL-PRF-19500/537)	
Test 1	$V_{CE} = 11.7 \text{ Vdc}, I_C = 15 \text{ Adc}$ All Types
Test 2	$V_{CE} = 30 \text{ Vdc}, I_C = 5.9 \text{ Adc}$ 2N6674, 2N6675
Test 3	$V_{CE} = 100 \text{ Vdc}, I_C = 0.25 \text{ Adc}$ All Types
Test 4	$V_{CE} = 25 \text{ Vdc}, I_C = 7.0 \text{ Adc}$ 2N6689, 2N6690
Test 5	$V_{CE} = 300 \text{ Vdc}, I_C = 20 \text{ mAdc}$ 2N6674, 2N6689 $V_{CE} = 400 \text{ Vdc}, I_C = 10 \text{ mAdc}$ 2N6675, 2N6690
Clamped Switching	
$T_A = 25^\circ\text{C}; V_{CC} = 15 \text{ Vdc}$; Load condition B; $R_{BB1} = 5 \ \Omega; R_{BB2} = 1.5 \ \Omega;$ $V_{BB2} = 5 \text{ Vdc}; L = 50 \ \mu\text{H}; R$ of inductor = .05 $\Omega; R_L = R$ of inductor. (See Figure 6 of MIL-PRF-19500/537)	
Clamp Voltage = 350; $I_C = 10 \text{ Adc}$ 2N6674, 2N6689	
Clamp Voltage = 450; $I_C = 10 \text{ Adc}$ 2N6675, 2N6690	

(4) Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.



LittleDiode supplies new, hard to find or obsolete electronic components and semiconductors all over the world.

With over two million different components listed you are sure to find the part you need.

Feel free to visit us today at our online store:

LittleDiode.com

Looking forward to providing you with the best possible service.