Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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Microsemi LAWRENCE

TECHNICAL DATA

NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/538

Devices				*Qualified Level*
2N6676	**2N6678**	**2N6691**	**2N6693**	**JAN JANTX JANTXV**

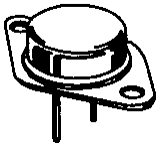
MAXIMUM RATINGS

Ratings	Symbol	2N6676 2N6691	2N6678 2N6693	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}	8.0		Vdc
Base Current	I_B	5.0		Adc
Collector Current	I_C	15		Adc
		2N6676 2N6678	**2N6691 2N6693**	
Total Power Dissipation @ $T_A = 25^0C$ @ $T_C = 25^0C$(1)	P_T	6.0(2) 175	3.0(3) 175	W W
Operating & Storage Junction Temperature Range	T_{op}, T_{stg}	-65 to +200		^0C

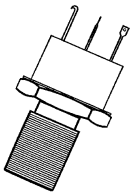
THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.0	$^0C/W$

1) Derate linearly 1.0 W/^{0}C for $T_C > 25^0C$
2) Derate linearly 34.2 mW/^{0}C for $T_A > 25^0C$
3) Derate linearly 17.1 mW/^{0}C for $T_A > 25^0C$



2N6676, 2N6678
TO-3 (TO-204AA)*



2N6691, 2N6693
TO-61*

* See Appendix A for Package Outline

ELECTRICAL CHARACTERISTICS ($T_C = 25^0C$ unless otherwise noted)

Characteristics		Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage I_C = 200 mAdc	2N6676, 2N6691 2N6678, 2N6693	$V_{(BR)CEO}$	300 400		Vdc
Collector-Emitter Cutoff Current V_{CE} = 450 Vdc, V_{BE} = 1.5 Vdc V_{CE} = 650 Vdc, V_{BE} = 1.5 Vdc	2N6676, 2N6691 2N6678, 2N6693	I_{CEX}		0.1 0.1	mAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics		Symbol	Min.	Max.	Unit
Emitter-Base Cutoff Current V_{EB} = 8.0 Vdc		I_{EBO}		2.0	mAdc
Collector-Base Cutoff Current V_{CB} = 450 Vdc V_{CB} = 650 Vdc	 2N6676, 2N6691 2N6678, 2N6693	I_{CBO}		 1.0 1.0	 mAdc
ON CHARACTERISTICS (4)					
Forward-Current Transfer Ratio I_C = 1.0 Adc; V_{CE} = 3.0 Vdc I_C = 15 Adc; V_{CE} = 3.0 Vdc		h_{FE}	 15 8.0	 40 20	
Collector-Emitter Saturation Voltage I_C = 15 Adc; I_B = 3.0 Adc		$V_{CE(sat)}$		1.0	Vdc
Base-Emitter Saturation Voltage I_C = 15 Adc; I_B = 3.0 Adc		$V_{BE(sat)}$		1.5	Vdc
DYNAMIC CHARACTERISTICS					
Small-Signal Short-Circuit Forward Current Transfer Ratio I_C = 1.0 Adc; V_{CE} = 10 Vdc, f = 5 MHz		$\lvert h_{fe} \rvert$	3.0	10	
Output Capacitance V_{CB} = 10 Vdc; I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz		C_{obo}	150	500	pF
SWITCHING CHARACTERISTICS					
Delay Time	See Figure 3 of MIL-PRF-19500/538	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	
T_C = +25°C, 1 Cycle, t = 1.0 s	
Test 1	
V_{CE} = 11.7 Vdc, I_C = 15 Adc	All Types
Test 2	
V_{CE} = 30 Vdc, I_C = 5.9 Adc	2N6676, 2N6678
Test 3	
V_{CE} = 100 Vdc, I_C = 0.25 Adc	All Types
Test 4	
V_{CE} = 25 Vdc, I_C = 7.0 Adc	2N6691, 2N6693
Test 5	
V_{CE} = 300 Vdc, I_C = 20 mAdc	2N6676, 2N6691
V_{CE} = 400 Vdc, I_C = 10 mAdc	2N6678, 2N6693
Clamped Switching	
T_A = 25°C; V_{CC} = 15 Vdc	
I_C = 15 Adc; Clamped Voltage = 350 Vdc	2N6676, 2N6691
I_C = 15 Adc; Clamped Voltage = 450 Vdc	2N6678, 2N6693

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