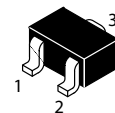
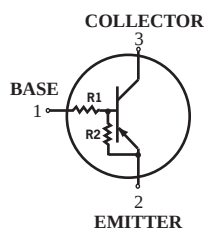


Bias Resistor Transistor PNP Silicon

 Lead(Pb)-Free



SOT-323(SC-70)

Maximum Ratings (T_A=25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V _{CEO}	50	V _{dc}
Collector-Base Voltage	V _{CBO}	50	V _{dc}
Collector Current-Continuous	I _C	100	mA _{dc}

Thermal Characteristics

Characteristics	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (1)T _A =25°C Derate above 25°C	P _D	202 (1) 310 (2) 1.6 (1) 2.5 (2)	mW mW/°C
Thermal Resistance, Junction to Ambient (1)	R _{θJA}	618 403	°C/W
Junction and Storage, Temperature Range	T _J ,T _{stg}	-55 to +150	°C

1.FR-4 @ minimum pad

2.FR-4 @ 1.0×1.0 inch Pad

Device Marking and Resistor Values

Device	Marking	R1(K)	R2(K)	Device	Marking	R1(K)	R2(K)
MUN5111	6A	10	10	MUN5131	6H	2.2	2.2
MUN5112	6B	22	22	MUN5132	6J	4.7	4.7
MUN5113	6C	47	47	MUN5133	6K	4.7	47
MUN5114	6D	10	47	MUN5134	6L	22	47
MUN5115	6E	10	∞	MUN5135	6M	2.2	47
MUN5116	6F	4.7	∞	MUN5136	6N	100	100
MUN5130	6G	1.0	1.0	MUN5137	6P	47	22

Electrical Characteristics (TA=25 °C Unless Otherwise noted)

Characteristics	Symbol	Min	Typ	Max	Unit
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Off Characteristics

Collector-Emitter Breakdown Voltage ($I_C=2.0\text{mA}$, $I_B=0$)	V(BR)CEO	50	-	-	V
Collector-Base Breakdown Voltage ($I_C=10\text{ uA}$, $I_E=0$)	V(BR)CBO	50	-	-	V
Collector-Base Cutoff Current ($V_{CB}=-50\text{ V}$, $I_E=0$)	ICBO	-	-	100	nA
Collector-Emitter Cutoff Current ($V_{CE}=-50\text{ V}$, $I_B=0$)	ICEO	-	-	500	nA
Emitter-Base Cutoff Current ($V_{EB}=6.0\text{ V}$, $I_C=0$)	IEBO	-	-	0.5	mA
MUN5111		-	-	0.2	
MUN5112		-	-	0.1	
MUN5113		-	-	0.2	
MUN5114		-	-	0.9	
MUN5115		-	-	1.9	
MUN5116		-	-	4.3	
MUN5130		-	-	2.3	
MUN5131		-	-	1.5	
MUN5132		-	-	0.18	
MUN5133		-	-	0.13	
MUN5134		-	-	0.2	
MUN5135		-	-	0.05	
MUN5136		-	-	0.13	
MUN5137		-	-		

On Characteristics

Collector-Emitter Saturation Voltage ($I_C=10\text{mA}$, $I_E=0.3\text{mA}$) ($I_C=10\text{mA}$, $I_B=5\text{mA}$) MUN5130/MUN5131 ($I_C=10\text{mA}$, $I_B=1\text{mA}$) MUN5115/MUN5116 MUN5132/MUN5133/MUN5134	VCE(sat)	-	-	0.25	Vdc
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3. Pulse Test: Pulse Width < 300 us, Duty Cycle < 2.0%

Electrical Characteristics (TA=25°C Unless Otherwise noted)

Characteristics	Symbol	Min	Typ	Max	Unit
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On Characteristics (3)

DC Current Gain (VCE=-10V, IC=-5.0mA)	MUN5111	h _{FE}	35	60	-	
	MUN5112		60	100	-	
	MUN5113		80	140	-	
	MUN5114		80	140	-	
	MUN5115		160	250	-	
	MUN5116		160	250	-	
	MUN5130		3.0	5.0	-	
	MUN5131		8.0	15	-	
	MUN5132		15	27	-	
	MUN5133		80	140	-	
	MUN5134		80	130	-	
	MUN5135		80	140	-	
	MUN5136		80	150	-	
	MUN5137		80	140	-	
Output Voltage(on) (VCC=5.0V, VB=2.5V, RL=1.0kΩ) (VCC=5.0V, VB=3.5V, RL=1.0kΩ) (VCC=5.0V, VB=5.5V, RL=1.0kΩ) (VCC=5.0V, VB=4.0V, RL=1.0kΩ)	MUN5111	VOL	-	-	0.2	Vdc
	MUN5112		-	-	0.2	
	MUN5113		-	-	0.2	
	MUN5114		-	-	0.2	
	MUN5115		-	-	0.2	
	MUN5116		-	-	0.2	
	MUN5130		-	-	0.2	
	MUN5131		-	-	0.2	
	MUN5132		-	-	0.2	
	MUN5133		-	-	0.2	
	MUN5134		-	-	0.2	
	MUN5135		-	-	0.2	
	MUN5136		-	-	0.2	
	MUN5137		-	-	0.2	
Output Voltage(off) (VCC=5.0V, VB=0.5V, RL=1.0kΩ) (VCC=5.0V, VB=0.05V, RL=1.0kΩ) (VCC=5.0V, VB=0.25V, RL=1.0kΩ)	MUN5130	VOH	4.9	-	-	Vdc
	MUN5115					
	MUN5116					
	MUN5131					
	MUN5133					

3. Pulse Test: Pulse Width<300 us, Duty Cycle<2.0%

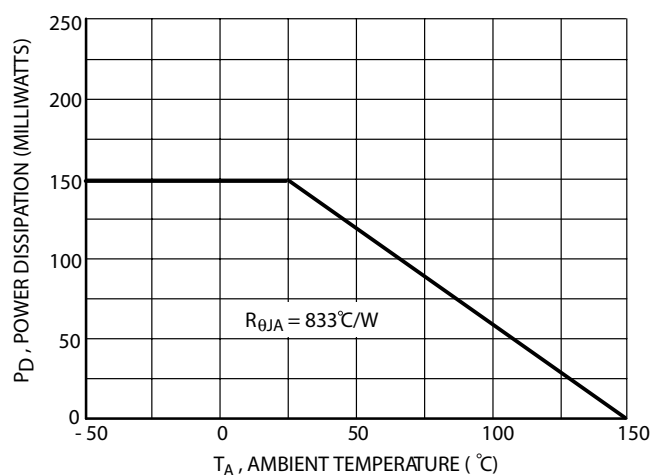
Electrical Characteristics (TA=25℃ Unless Otherwise noted)

Characteristics	Symbol	Min	Typ	Max	Unit
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On Characteristics

Input Resistor	MUN5111	R1	7.0	10	13	kΩ
	MUN5112		15.4	22	28.6	
	MUN5113		32.9	47	61.1	
	MUN5114		7.0	10	13	
	MUN5115		7.0	10	13	
	MUN5116		3.3	4.7	6.1	
	MUN5130		0.7	1.0	1.3	
	MUN5131		1.5	2.2	2.9	
	MUN5132		3.3	4.7	6.1	
	MUN5133		3.3	4.7	6.1	
	MUN5134		15.4	22	28.6	
	MUN5135		1.54	2.2	2.86	
	MUN5136		70	100	130	
	MUN5137		32.9	47	61.1	
Resistor Ratio MUN5111/MUN5112/MUN5113		R1/R2				
MUN5136			0.8	1.0	1.2	
MUN5114			0.17	0.21	0.25	
MUN5115/MUN5116			-	-	-	
MUN5130/MUN5131/MUN5132			0.8	1.0	1.2	
MUN5133			0.055	0.1	0.185	
MUN5134			0.38	0.47	0.56	
MUN5135			0.038	0.047	0.056	
MUN5137		1.7	2.1	2.6		

4. Pulse Test: Pulse Width < 300 us, Duty Cycle < 2.0 %

MUN5111T1 Series
ALL MUN5111 SERIES DEVICES

FIG.1 Derating Curve

MUN5111 Series

TYPICAL ELECTRICAL CHARACTERISTICS-MUN5135

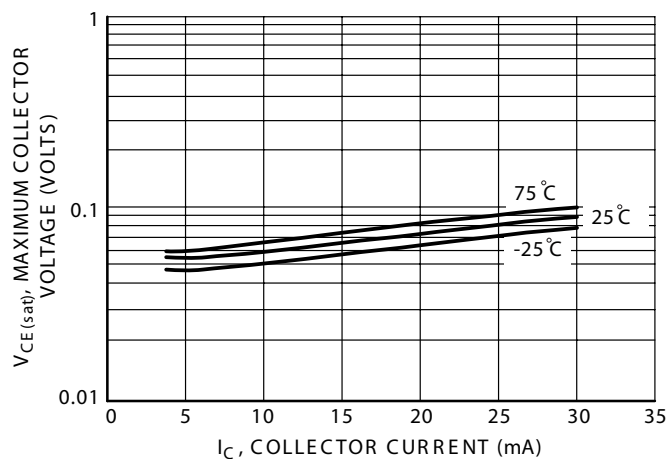


FIG.2 Maximum Collector Voltage versus Collector Current

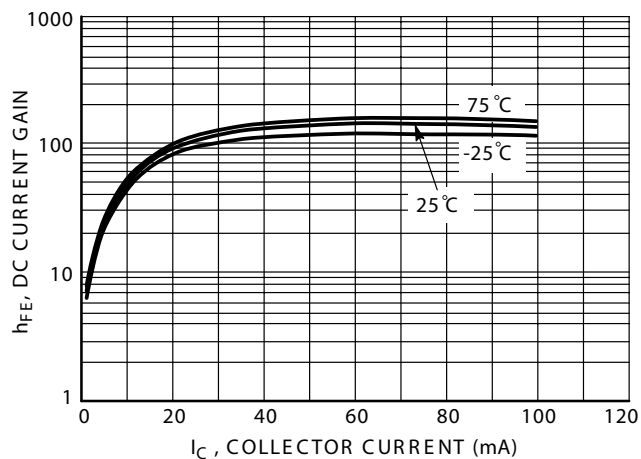


FIG.3 DC Current Gain

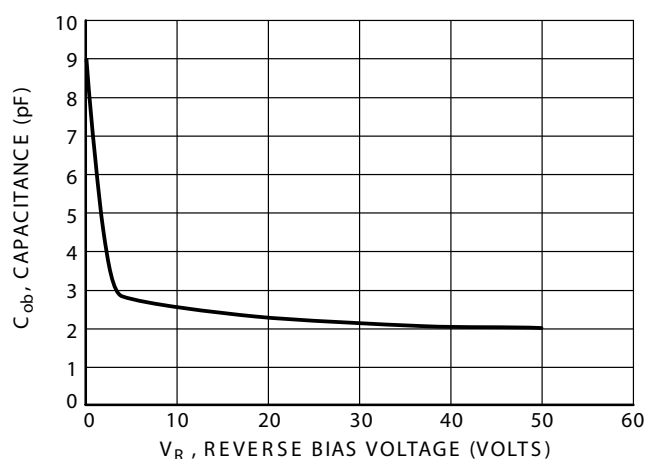


FIG.4 Output Capacitance

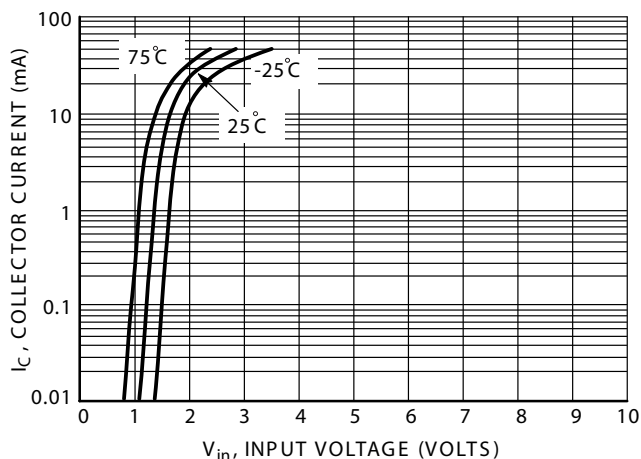


FIG.5 Output Current versus Input Voltage

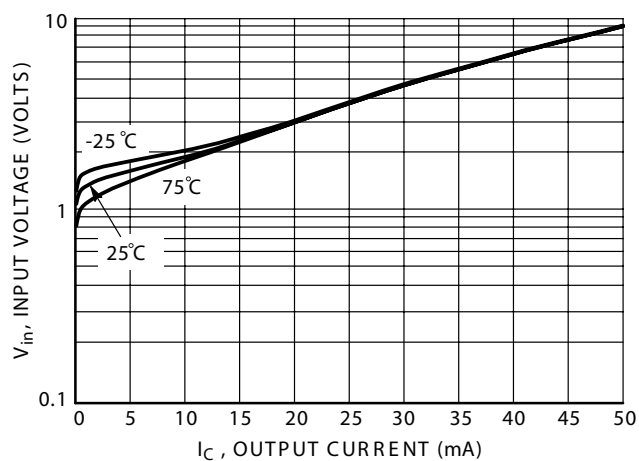
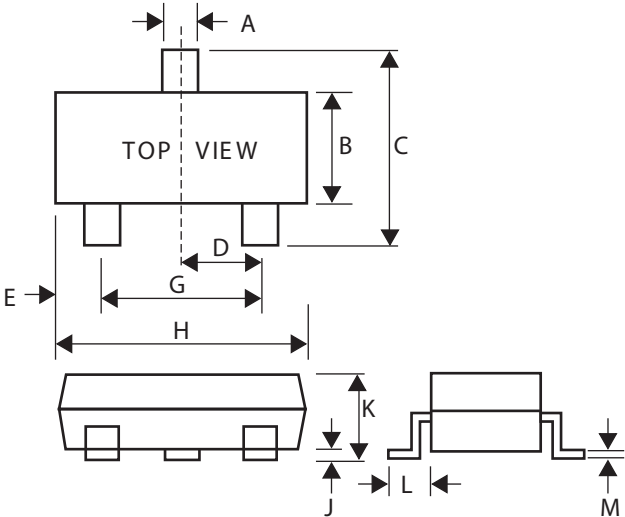


FIG.6 Input Voltage versus Output Current

SOT-323 Outline Demensions

Unit:mm



SOT-323		
Dim	Min	Max
A	0.30	0.40
B	1.15	1.35
C	2.00	2.40
D	-	0.65
E	0.30	0.40
G	1.20	1.40
H	1.80	2.20
J	0.00	0.10
K	0.80	1.00
L	0.42	0.53
M	0.10	0.25