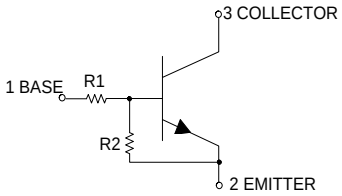
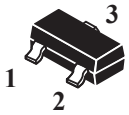
Bias Resistor Transistor
NPN Silicon





SOT-23

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	VCEO	50	Vdc
Collector-Base Voltage	VCBO	50	Vdc
Collector Current-Continuous	Ic	100	mAdc

THERMAL CHARACTERISTICS

Characteristics	Symbol	Value	Unit
Total Power Dissipation @T_A= 25°C FR-5 Board (Note 1.) Derate above 25°C	PD	 246 1.5	 mW mW / °C
Thermal Resistance, Junction to Ambient (Note 1.)	$R_{\theta JA}$	508	°C/W
Junction and Storage, Temperature	TJ,Tstg	-55 to +150	°C

1. FR–5 @ Minimum Pad.

Device Marking and Resistor Values

Device	Marking	R1(k)	R2(k)	V_{IN}(V)
S-MMUN2233-V	A8K	4.7	47	-5~+30

ELECTRICAL CHARACTERISTICS (Ta= 25° C)

OFF CHARACTERISTICS

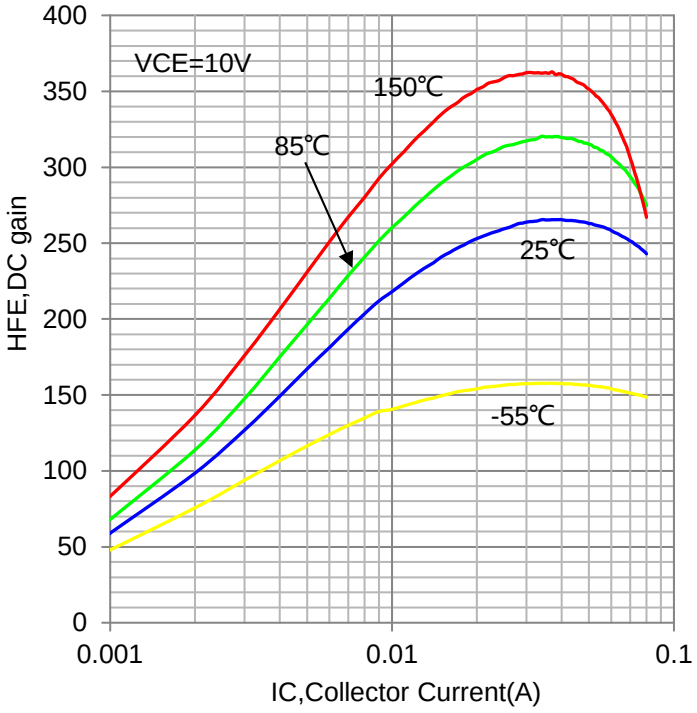
Characteristic	Symbol	Min.	Typ.	Max.	Unit
Collector–Emitter Breakdown Voltage (IC = 2.0 mA, IB = 0)	VBR(CEO)	50	-	-	V
Collector–Base Breakdown Voltage (IC = 10 µA, IE = 0)	VBR(CBO)	50	-	-	V
Collector-Base Cutoff Current (VCB = 50 V, IE = 0)	ICBO	-	-	100	nA
Collector-Emitter Cutoff Current (VCE = 50 V, IB = 0)	ICEO	-	-	500	nA
Emitter-Base Cutoff Current (VEB = 6.0 V, IC = 0)	IEBO	-	-	0.18	mA

ON CHARACTERISTICS (Note 2.)

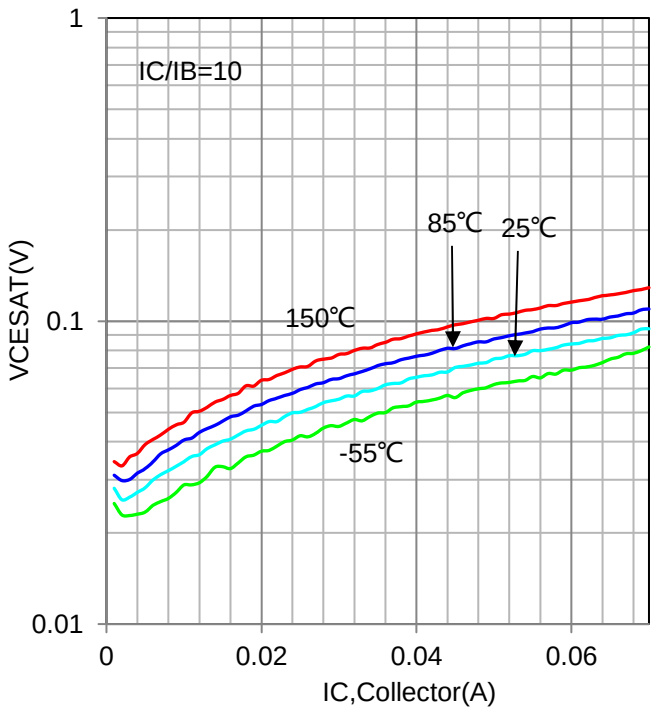
DC Current Gain (IC = 5.0 mA, VCE = 10 V)	HFE	80	200	-	
Collector–Emitter Saturation Voltage (IC = 10 mA, IB = 1 mA)	VCE(sat)	-	-	0.25	V
Output Voltage (on) (VCC = 5.0 V, VB = 2.5 V, RL =1.0KΩ)	VOL	-	-	0.2	V
Output Voltage (on) (VCC = 5.0 V, VB = 0.25 V, RL =1.0KΩ)	VOH	4.9	-	-	V
Input Resistor	R1	3.3	4.7	6.1	KΩ
Resistor Ratio	R1/R2	0.055	0.1	0.185	
Input Voltage (VCE =5V,IC=100µA)	Vl(off)	-	-	0.5	V
Input Voltage (VCE=0.3V,IC=5mA)	Vl(on)	1.3	-	-	V

2. Pulse Test: Pulse Width < 300 µs, Duty Cycle < 2.0%

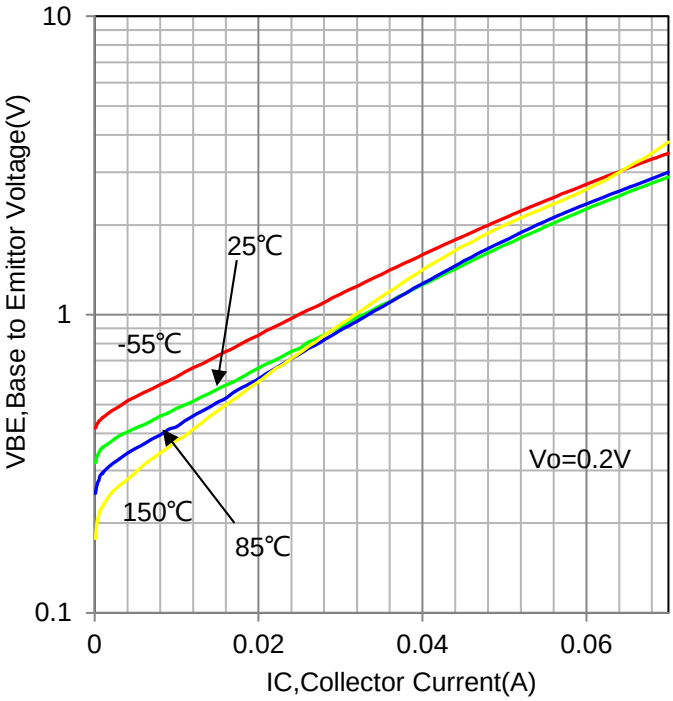
ELECTRICAL CHARACTERISTICS CURVES



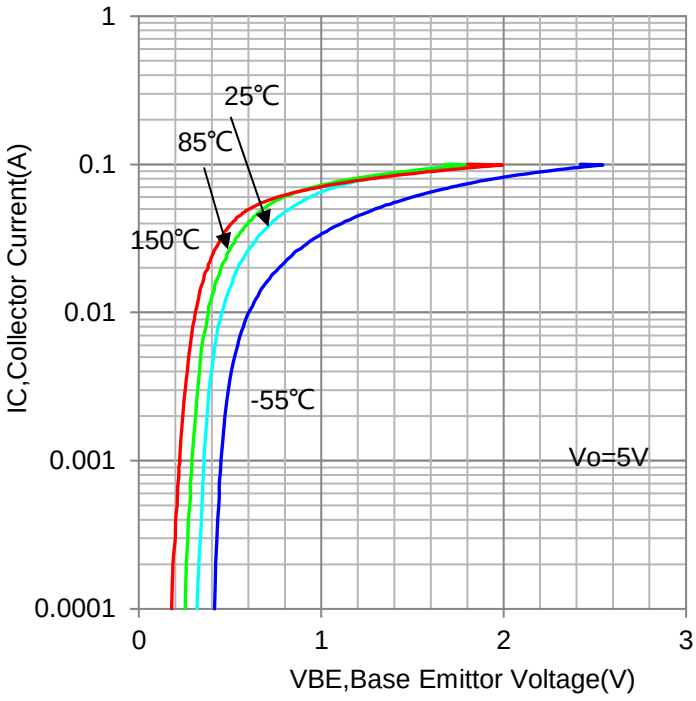
HFE vs. IC



VCESAT vs. IC

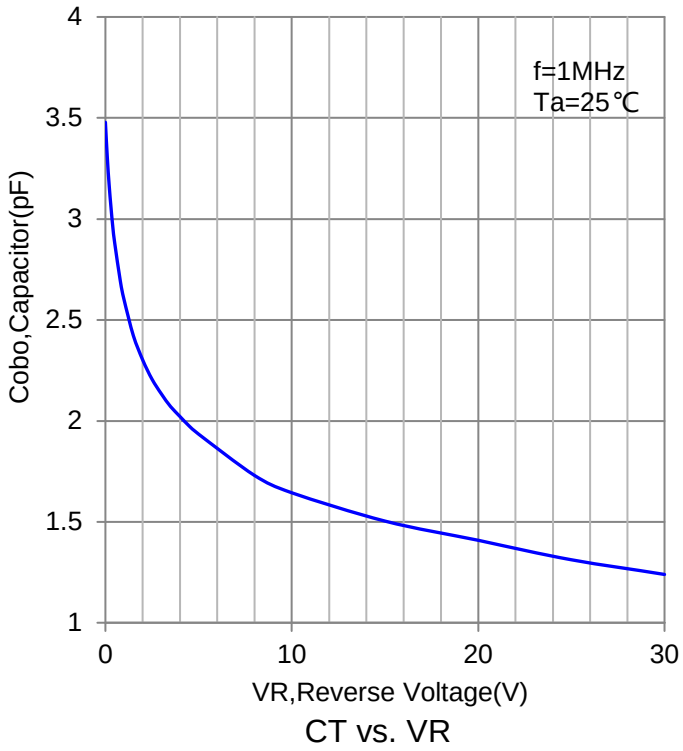


VBE vs. IC



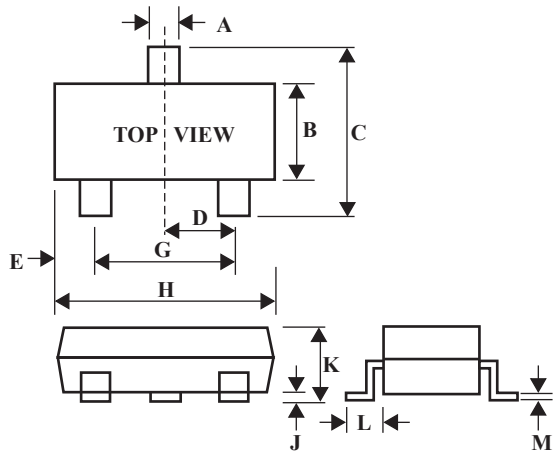
VBE vs. IC

ELECTRICAL CHARACTERISTICS CURVES(Con.)



CT vs. VR

SOT-23 Package Outline Dimension



SOT-23		
Dim	**Min**	**Max**
A	0.35	0.51
B	1.19	1.40
C	2.10	2.64
D	0.85	1.05
E	0.46	1.00
G	1.70	2.10
H	2.70	3.10
J	0.01	0.13
K	0.89	1.12
L	0.30	0.69
M	0.076	0.25