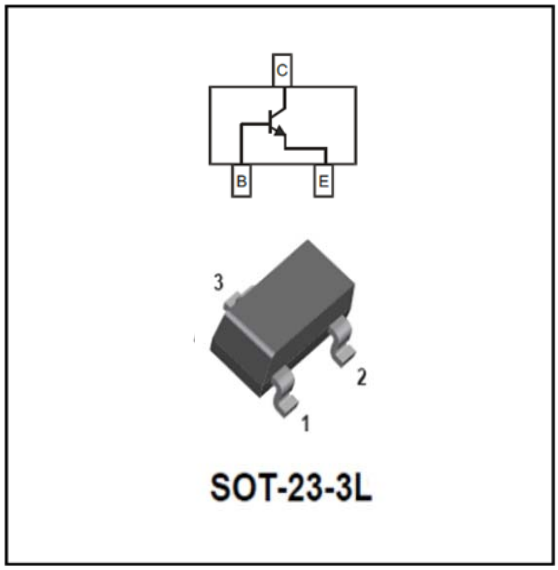
NPN Transistor



Features

- Moisture sensitivity level 1
- Halogen free and RoHS compliant
- Surface mount package ideally suited for automatic insertion

Application

- Signal amplification
- Switching circuit

Mechanical data

- **Package**: SOT-23-3L
- **Terminals**: Tin plated leads, solderable per J-STD-002 and JESD22-B102

■ Maximum Ratings (Ta=25℃ unless otherwise noted)

Item	Symbol	Unit	Conditions	Value
Device marking code				619L
Collector-base voltage	V_{CBO}	V	I_C=100μA,IE=0	50
Collector-emitter voltage	V_{CEO}	V	I_C =10mA,IB=0	50
Emitter-base voltage	V_{EBO}	V	I_E=100μA,IC=0	5
Collector current	I_C	A		2
Power dissipation	P_D	mW		200
Junction temperature	T_J	℃		-55 to +150
Storage temperature	T_{STG}	℃		-55 to +150

■ Electrical Characteristics (Ta=25℃ unless otherwise noted)

Item	Symbol	Unit	Conditions	Min	Type	Max
Collector-base breakdown voltage	V_{CBO}	V	I_C=100μA,I_E=0	50		
Collector-emitter breakdown voltage	V_{CEO}	V	I_C =10mA,I_B=0	50		
Emitter-base breakdown voltage	V_{EBO}	V	I_E=100μA,I_C=0	5		
Collector-base cut-off current	I_{CBO}	uA	V_{CB}=40 V ,I_E=0			0.1
Emitter-base cut-off current	I_{EBO}	uA	V_{EB}=4 V , I_C=0			0.1
DC current gain	h_{FE1}		V_{CE}=2V,I_C=10mA	200		
	h_{FE2}		V_{CE}=2V,I_C=200mA	300		
	h_{FE3}		V_{CE}=2V,I_C=1A	200		
	h_{FE4}		V_{CE}=2V,I_C=2A	100		

Collector-emitter saturation voltage	$V_{CE(sat)1}$	V	I_C=100mA,I_B=10mA			0.02
	$V_{CE(sat)2}$	V	I_C=1A,I_B=10mA			0.2
	$V_{CE(sat)3}$	V	I_C=2A,I_B=100mA			0.22
Base-emitter saturation voltage	$V_{BE(sat)*}$	V	I_C=2A,I_B=50mA			1
Base-emitter voltage	V_{BE}	V	V_{CE}=2V,I_C=2A			1
Transition frequency	f_T	MHz	V_{CE}= 5V, I_C=100mA, f=100MHz	100		
Collector-base output capacitance	Cob	pF	V_{CB}=10V ,I_E=0, f=1MHz			20

■ Thermal Characteristics

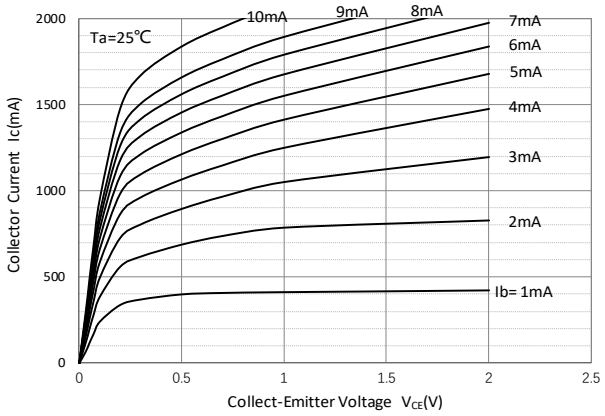
Parameter	Symbol	Unit	Value
Thermal resistance, junction-to-ambient	RθJ-A(1)	℃/W	625
Thermal resistance, junction-to-case	RθJ-C(1)	℃/W	500

■ Ordering Information (Example)

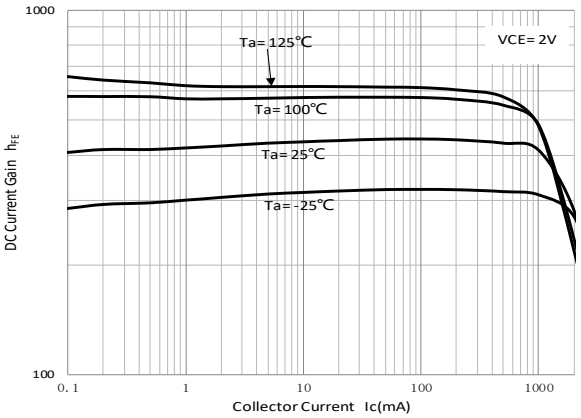
PREFERED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
FMMT619L	F2	Approximate 0.014	3000	30000	120000	7” reel

■ **Characteristics**(Typical)

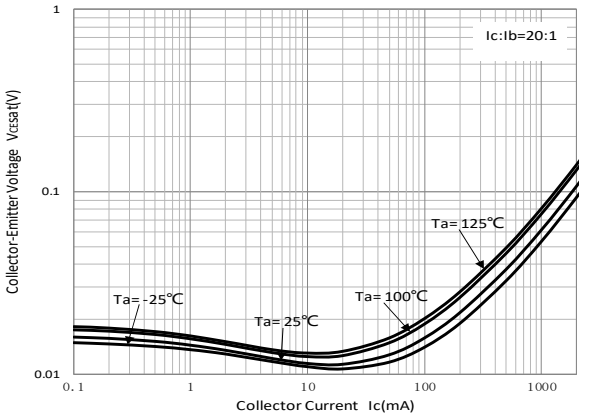
Static Characteristic



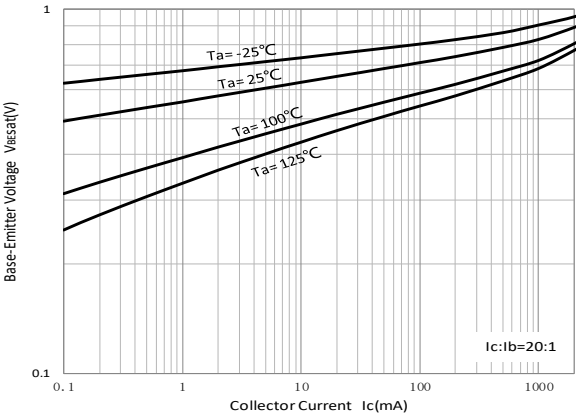
DC Current Gain



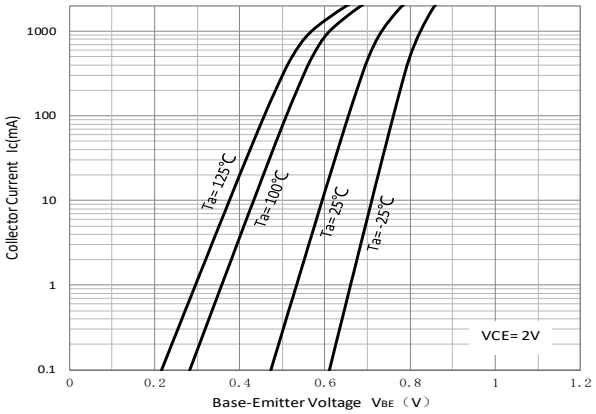
Collector-Emitter Saturation Voltage



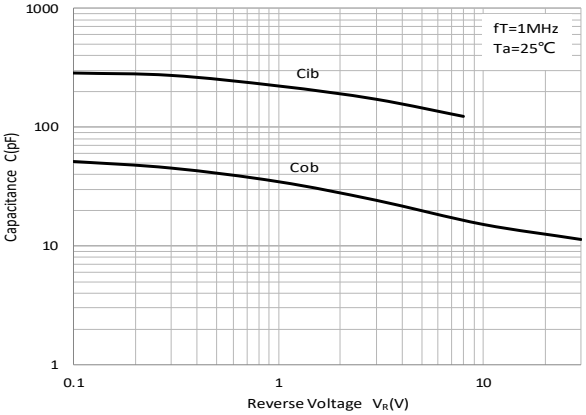
Base-Emitter Saturation Voltage

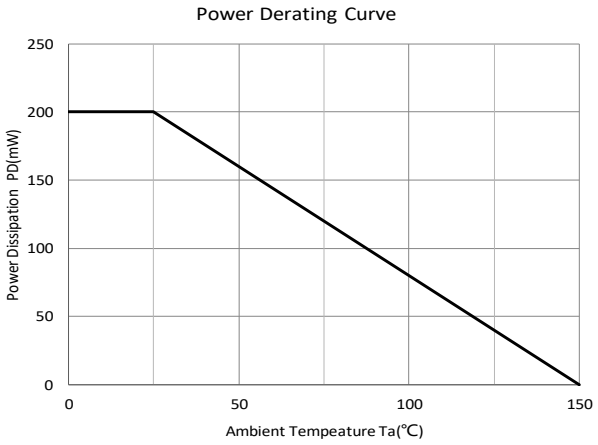


Base-Emitter On Voltage

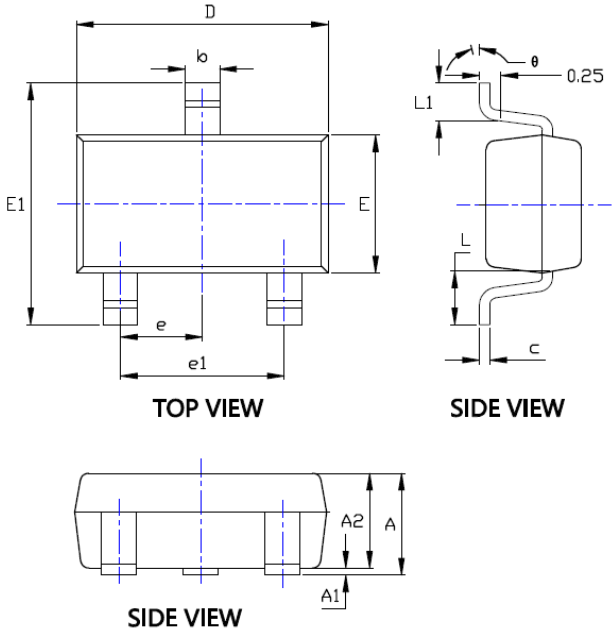


Cob/Cib-V_{CB}/V_{EB}



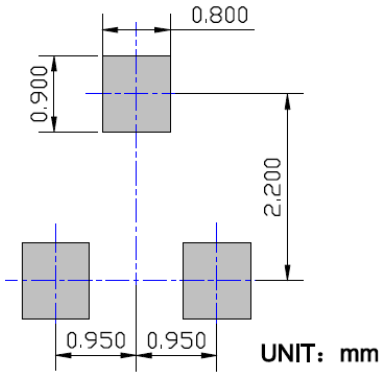


■SOT-23-3L Package Outline Dimensions



DIMENSIONS				
SYMBOL	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.041	0.049	1.050	1.250
A1	0.000	0.008	0.000	0.200
A2	0.041	0.045	1.050	1.150
b	0.012	0.020	0.300	0.500
c	0.004	0.008	0.100	0.200
D	0.111	0.119	2.820	3.020
E	0.059	0.067	1.500	1.700
E1	0.104	0.116	2.650	2.950
e	0.037TYP		0.950TYP	
e1	0.071	0.079	1.800	2.000
L	0.024REF		0.600REF	
L1	0.012	0.024	0.300	0.600
ø	0°	8°	0°	8°

■SOT-23-3L Soldering Footprint



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