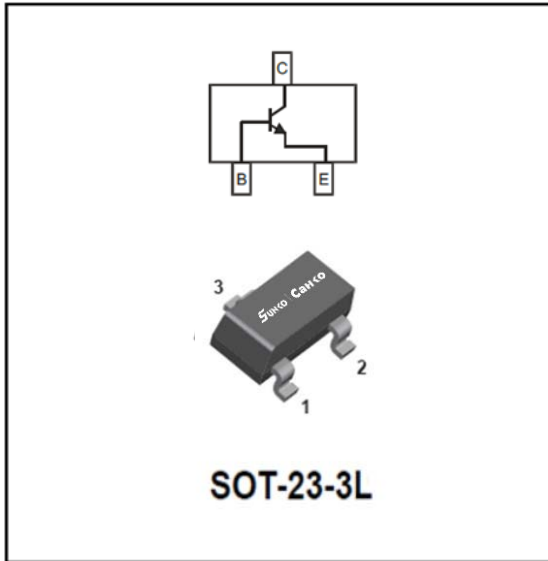


NPN Transistor



Features

- Moisture sensitivity level 1
- Halogen free and
- 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°C unless otherwise noted)

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

■ Electrical Characteristics (Ta=25°C unless otherwise noted)

Item	Symbol	Unit	Conditions	Min	Type	Max
Collector-base breakdown voltage	V_{CBO}	V	$I_C=100\mu A, I_E=0$	50		
Collector-emitter breakdown voltage	V_{CEO}	V	$I_C=10mA, I_B=0$	50		
Emitter-base breakdown voltage	V_{EBO}	V	$I_E=100\mu A, I_C=0$	5		
Collector-base cut-off current	I_{CBO}	uA	$V_{CB}=40V, I_E=0$			0.1
Emitter-base cut-off current	I_{EBO}	uA	$V_{EB}=4V, I_C=0$			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		

FMMT619L

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

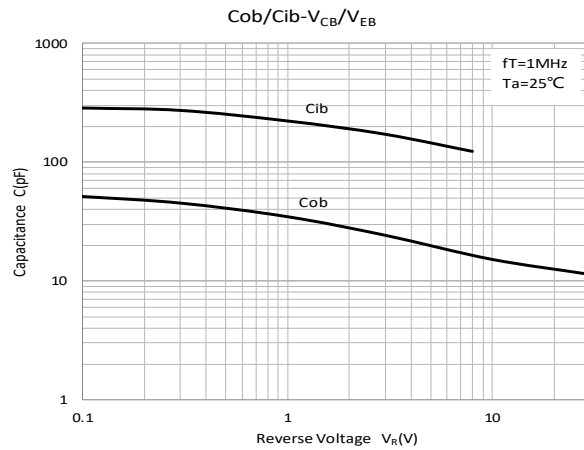
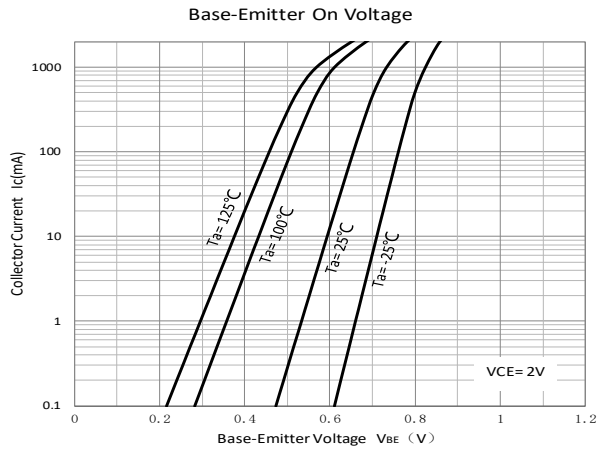
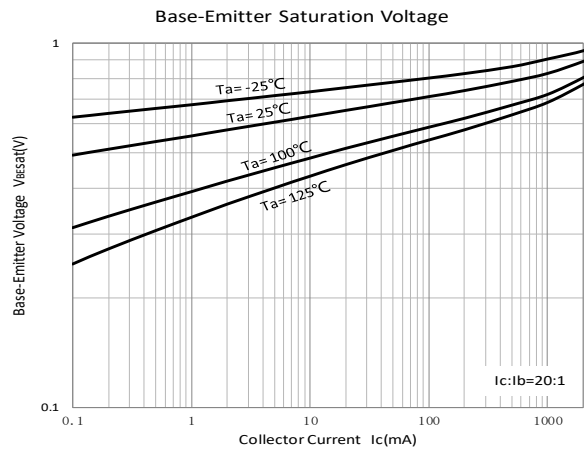
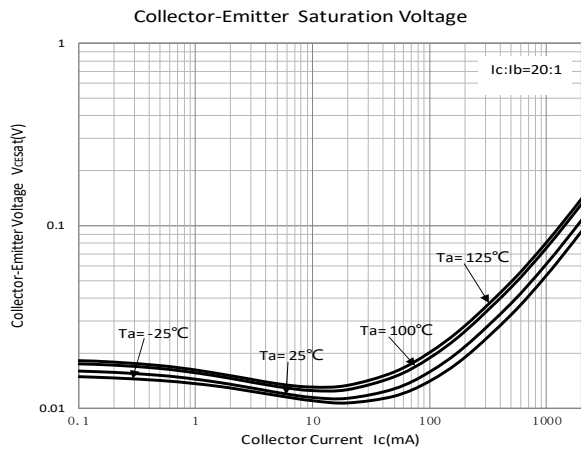
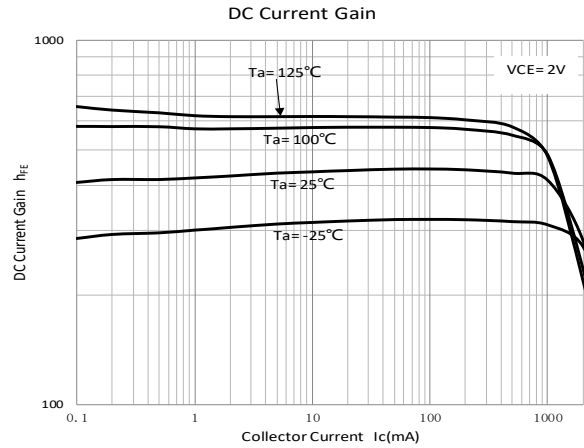
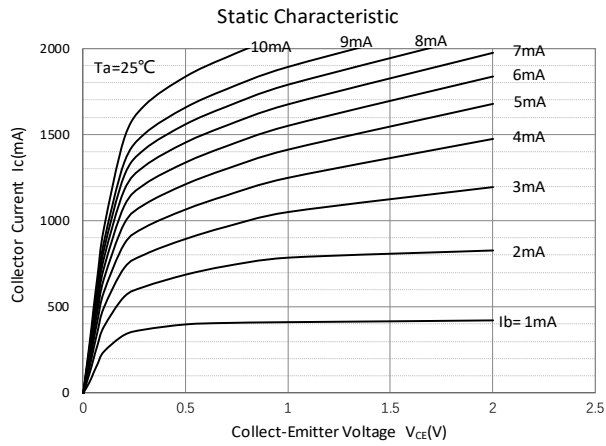
■ Thermal Characteristics

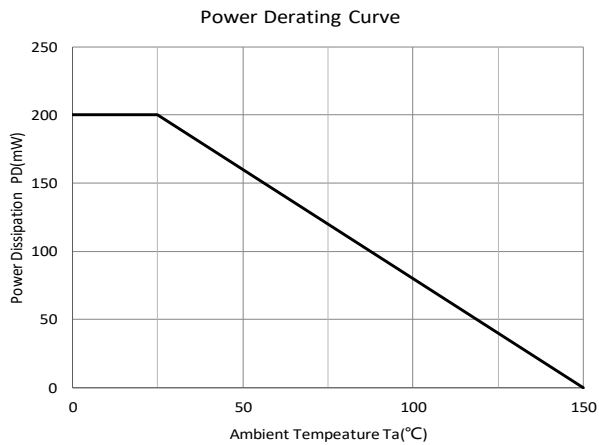
Parameter	Symbol	Unit	Value
Thermal resistance, junction-to-ambient	$R_{\theta J-A}^{(1)}$	°C/W	625
Thermal resistance, junction-to-case	$R_{\theta J-C}^{(1)}$	°C/W	500

■ Ordering Information (Example)

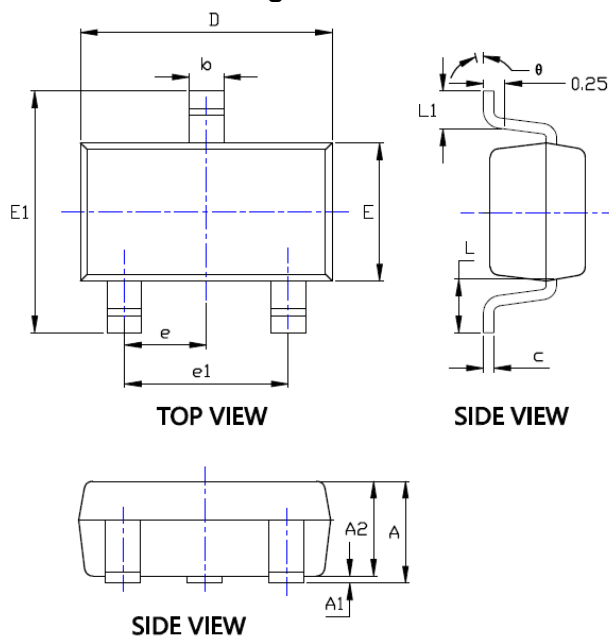
PREFERED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
FMMT619L	F2	Approximate 0.014	3000	30000	120000	7" reel

■ Characteristics(Typical)



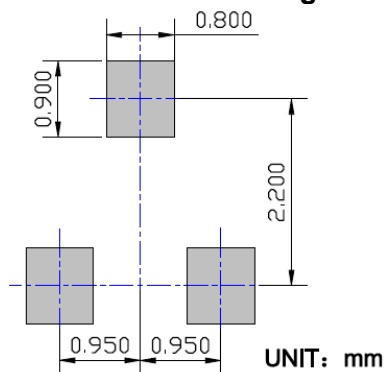


■SOT-23-3L Package Outline Dimensions



SYMBOL	DIMENSIONS			
	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	0.037 TYP		0.950 TYP	
e1	0.071	0.079	1.800	2.000
L	0.024 REF		0.600 REF	
L1	0.012	0.024	0.300	0.600
∅	0°	8°	0°	8°

■SOT-23-3L Soldering Footprint



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