

Features

- Halogen Free. "Green" Device (Note 1)
- AEC-Q101 Qualified
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings @ 25°C Unless Otherwise Specified

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C

NPN Transistor

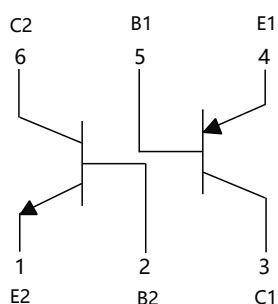
Parameter	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	180	V
Collector-Emitter Voltage	V_{CEO}	160	V
Emitter-Base Voltage	V_{EBO}	6	V
Continuous Collector Current	I_C	200	mA
Power Dissipation	P_D	200	mW
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	625	°C/W

PNP Transistor

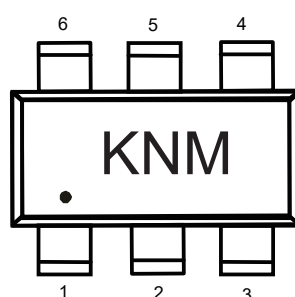
Parameter	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	-160	V
Collector-Emitter Voltage	V_{CEO}	-150	V
Emitter-Base Voltage	V_{EBO}	-5	V
Continuous Collector Current	I_C	-200	mA
Power Dissipation	P_D	200	mW
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	625	°C/W

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

Internal Structure

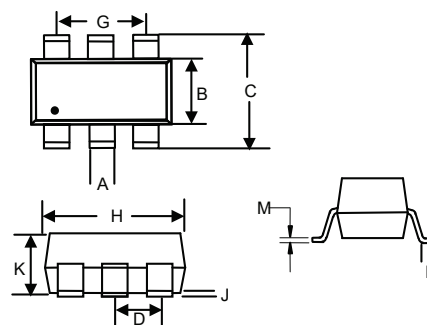


Device Marking



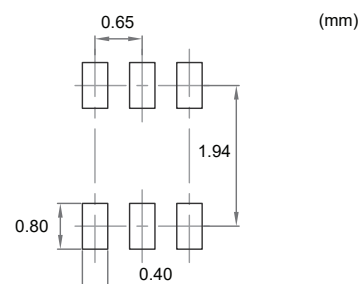
NPN/PNP Small Signal Transistors

SOT-363



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.006	0.014	0.15	0.35	
B	0.045	0.053	1.15	1.35	
C	0.079	0.096	2.00	2.45	
D	0.026		0.65		TYP.
G	0.047	0.055	1.20	1.40	
H	0.071	0.087	1.80	2.20	
J	-----	0.004	-----	0.10	
K	0.031	0.043	0.80	1.10	
L	0.010	0.018	0.26	0.46	
M	0.003	0.006	0.08	0.15	

Suggested Solder Pad Layout



Electrical Characteristics @ T_A=25°C Unless Otherwise Specified

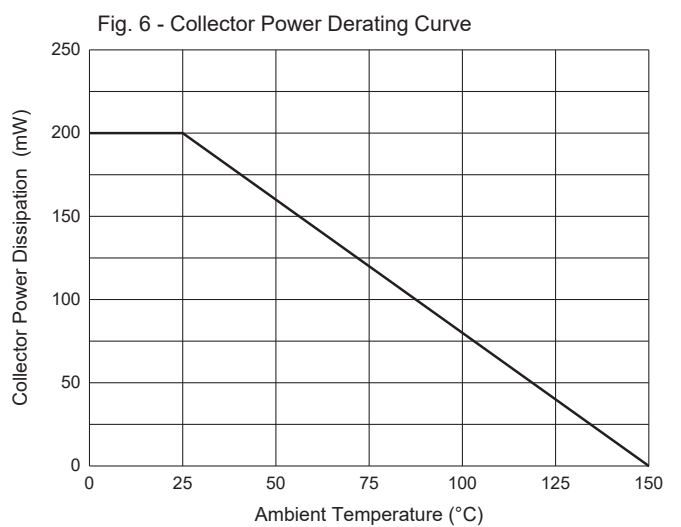
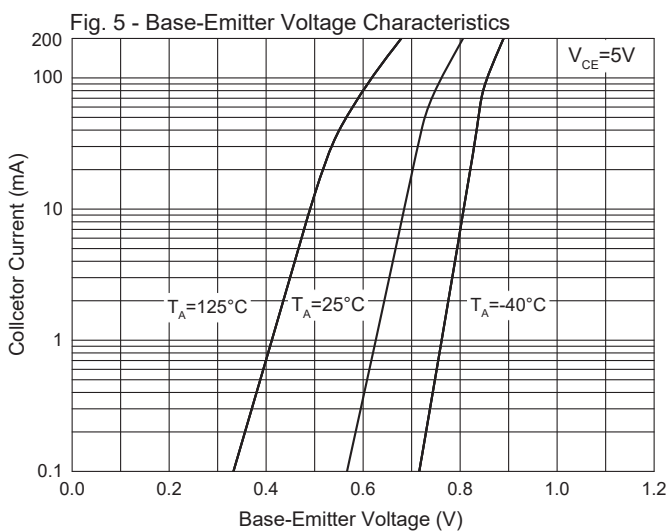
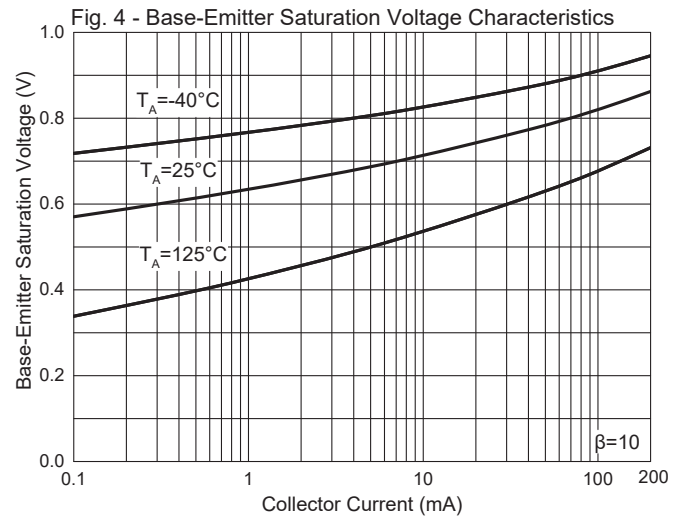
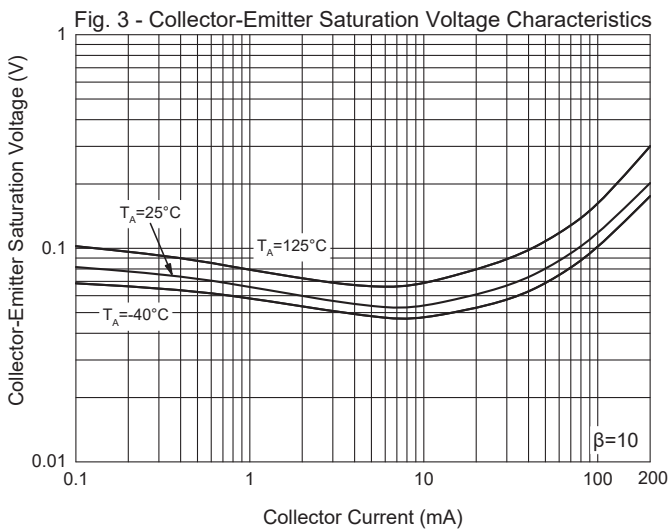
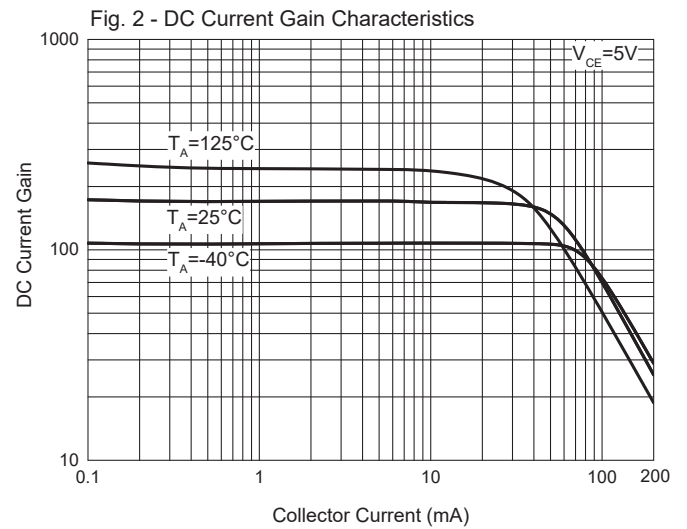
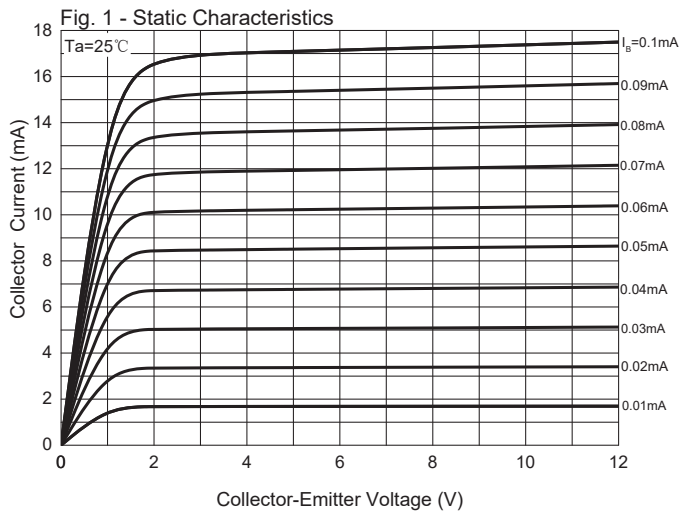
NPN Transistor

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	V _{(BR)CBO}	180			V	I _C =100μA, I _E =0
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	160			V	I _C =1mA, I _B =0
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	6			V	I _E =10μA, I _C =0
Collector Cutoff Current	I _{CBO}			50	nA	V _{CB} =120V, I _E =0
Emitter Cutoff Current	I _{EBO}			50	nA	V _{EB} =4V, I _C =0
DC Current Gain	h _{FE(1)}	80				V _{CE} =5V, I _C =1mA
	h _{FE(2)}	100		300		V _{CE} =5V, I _C =10mA
	h _{FE(3)}	30				V _{CE} =5V, I _C =50mA
Collector-Emitter Saturation Voltage	V _{CE(sat)}			0.15	V	I _C =10mA, I _B =1mA
				0.20	V	I _C =50mA, I _B =5mA
Base-Emitter Saturation Voltage	V _{BE(sat)}			1.0	V	I _C =10mA, I _B =1mA
				1.0	V	I _C =50mA, I _B =5mA
Transition Frequency	f _T	100		300	MHz	V _{CE} =10V, I _C =10mA, f=100MHz
Output Capacitance	C _{obo}			6	pF	V _{CB} =10V, I _E =0, f=1MHz

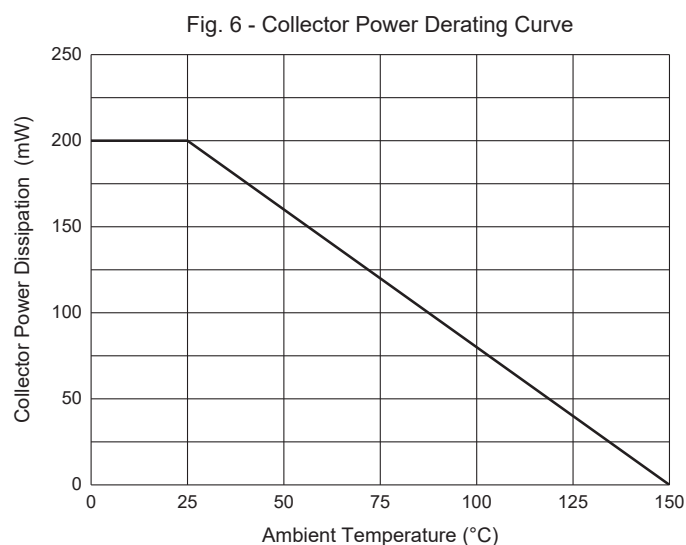
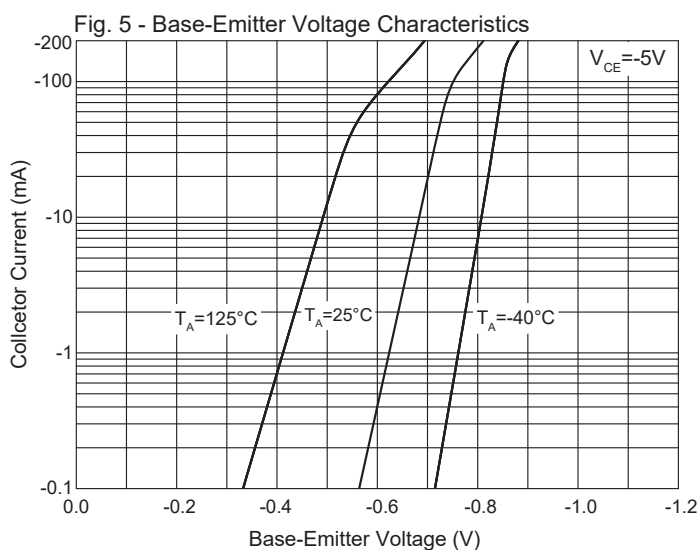
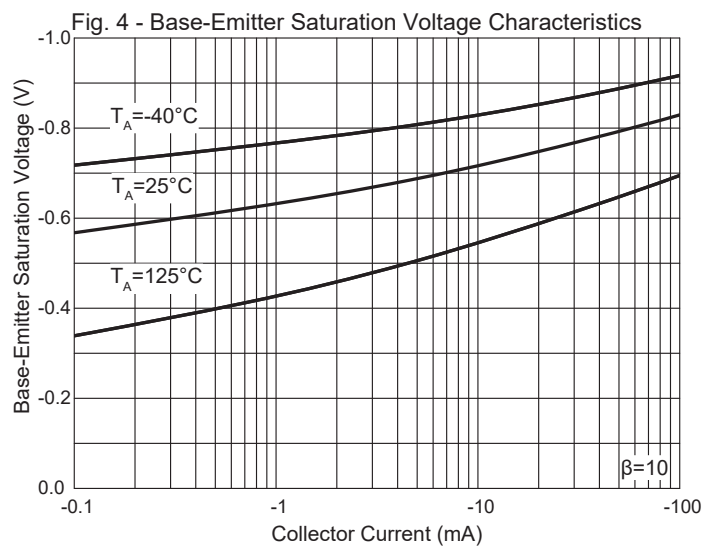
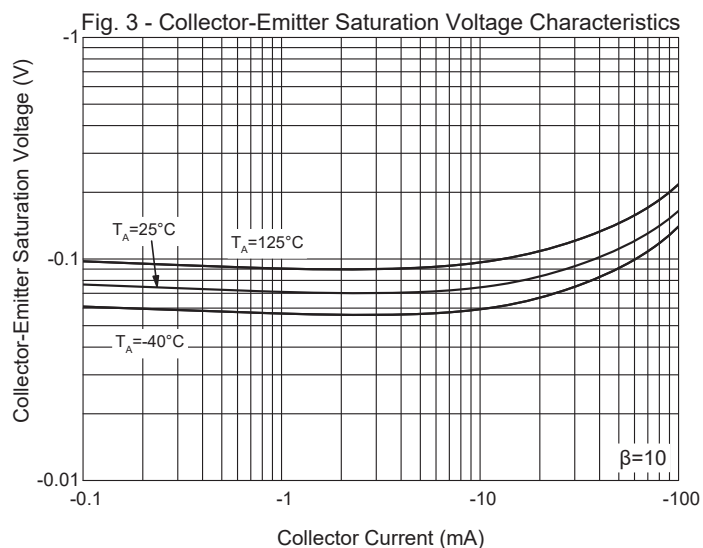
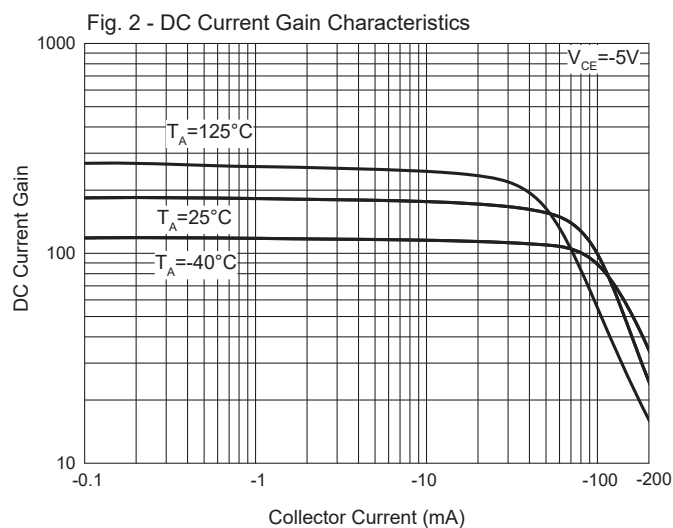
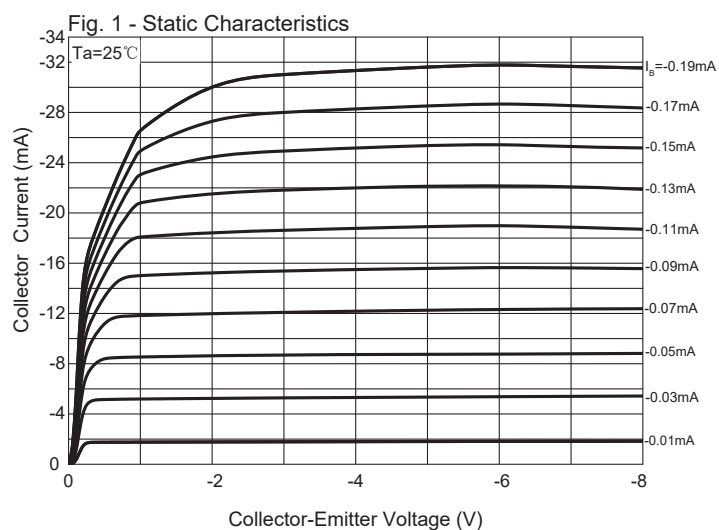
PNP Transistor

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	V _{(BR)CBO}	-160			V	I _C =-100μA, I _E =0
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	-150			V	I _C =-1mA, I _B =0
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	-5			V	I _E =-10μA, I _C =0
Collector Cutoff Current	I _{CBO}			-50	nA	V _{CB} =-120V, I _E =0
Emitter Cutoff Current	I _{EBO}			-50	nA	V _{EB} =-3V, I _C =0
DC Current Gain	h _{FE(1)}	50				V _{CE} =-5V, I _C =-1mA
	h _{FE(2)}	100		300		V _{CE} =-5V, I _C =-10mA
	h _{FE(3)}	50				V _{CE} =-5V, I _C =-50mA
Collector-Emitter Saturation Voltage	V _{CE(sat)}			-0.20	V	I _C =-10mA, I _B =-1mA
				-0.50	V	I _C =-50mA, I _B =-5mA
Base-Emitter Saturation Voltage	V _{BE(sat)}			-1.0	V	I _C =-10mA, I _B =-1mA
				-1.0	V	I _C =-50mA, I _B =-5mA
Transition Frequency	f _T	100		300	MHz	V _{CE} =-10V, I _C =-10mA, f=100MHz
Output Capacitance	C _{obo}			6	pF	V _{CB} =-10V, I _E =0, f=1MHz

Curve Characteristics(NPN)



Curve Characteristics(PNP)



Ordering Information

Device	Packing
MMDT5451HE3-TP	Tape&Reel: 3Kpcs/Reel

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