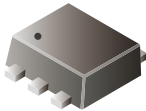


EMD9-HF (NPN+PNP)

RoHS Device
Halogen Free



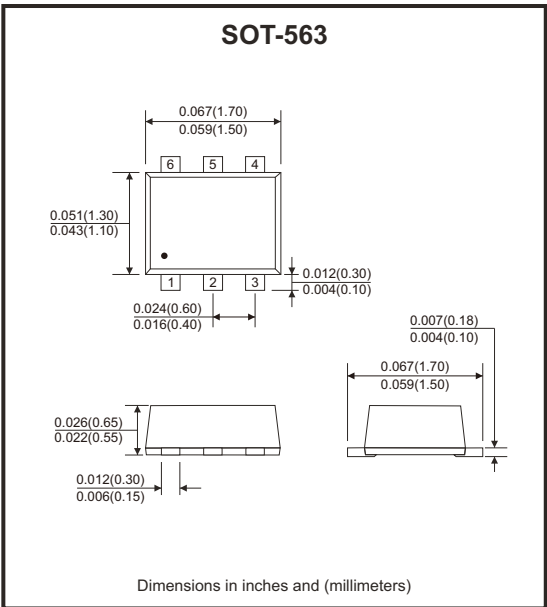
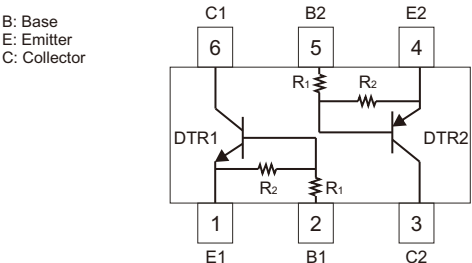
Features

- Surface mount package ideally suited for automatic insertion.
- Signal amplification.

Mechanical data

- Case: SOT-563, molded plastic.
- Terminals: Tin plated leads, solderable per J-STD-002 and JESD22-B102.
- Mounting position: Any.

Circuit Diagram



Maximum Ratings (at Ta=25°C unless otherwise noted)

Parameter	Symbol	DTR1	DTR2	Units
Supply voltage	V _{CC}	50	-50	V
Input voltage	V _{IN}	-6 to +40	-40 to +6	V
Output current	I _O	100	-100	mA
Power dissipation	P _D	150		mW
Operating junction temperature range	T _J	-55 to +150		°C
Storage temperature range	T _{STG}	-55 to +150		°C

Electrical Characteristics- DTR1 (at Ta=25°C unless otherwise noted)

Parameter	Symbol	Test conditions	Min	Typ	Max	Units
Input voltage	$V_{I(off)}$	$V_{CC} = 5V, I_C = 100\mu A$	0.3			V
Input voltage	$V_{I(on)}$	$V_O = 0.3V, I_C = 1mA$			1.4	V
Output voltage	$V_{O(on)}$	$I_O / I_I = 5mA / 0.25mA$			0.3	V
Input current	I_I	$V_I = 5V$			0.88	mA
Output current	$I_{O(off)}$	$V_{CC} = 50V, V_I = 0$			0.5	μA
DC current gain	G_I	$V_O = 5V, I_O = 5mA$	68			
Input resistor	R_I		7	10	13	k Ω
Resistance ratio	R_2/R_1		3.7	4.7	5.7	
Transition frequency	f_T	$V_{CE} = 10V, I_E = 5mA, f = 100MHz$		250		MHz

Electrical Characteristics- DTR2 (at Ta=25°C unless otherwise noted)

Parameter	Symbol	Test conditions	Min	Typ	Max	Units
Input voltage	$V_{I(off)}$	$V_{CC} = -5V, I_C = -100\mu A$	-0.3			V
Input voltage	$V_{I(on)}$	$V_O = -0.3V, I_C = -1mA$			-1.4	V
Output voltage	$V_{O(on)}$	$I_O / I_I = -5mA / -0.25mA$			-0.3	V
Input current	I_I	$V_I = -5V$			-0.88	mA
Output current	$I_{O(off)}$	$V_{CC} = -50V, V_I = 0$			-0.5	μA
DC current gain	G_I	$V_O = -5V, I_O = -5mA$	68			
Input resistor	R_I		7	10	13	k Ω
Resistance ratio	R_2/R_1		3.7	4.7	5.7	
Transition frequency	f_T	$V_{CE} = -10V, I_E = -5mA, f = 100MHz$		250		MHz

Thermal Characteristics

Parameter	Symbol	Value	Units
Thermal resistance, junction to ambient (Note 1)	$R_{\theta JA}$	833	$^{\circ}C/W$
Thermal resistance, junction to case (Note 1)	$R_{\theta JC}$	667	

Notes: 1. Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 25.4mm x 25.4mm copper pad areas

Typical Rating and Characteristic Curves - DTR1 (EMD9-HF)

Fig.1 - DC Current Gain Characteristics

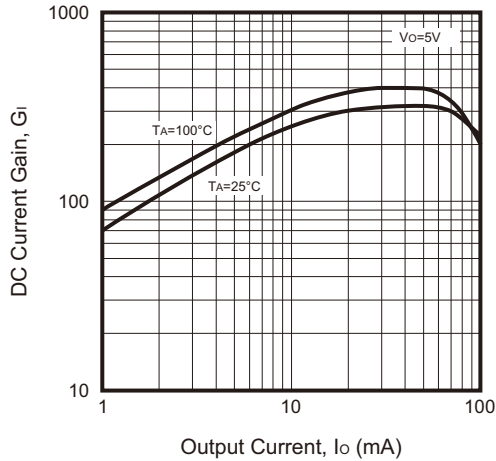


Fig.2 - Input Voltage (On) Characteristics

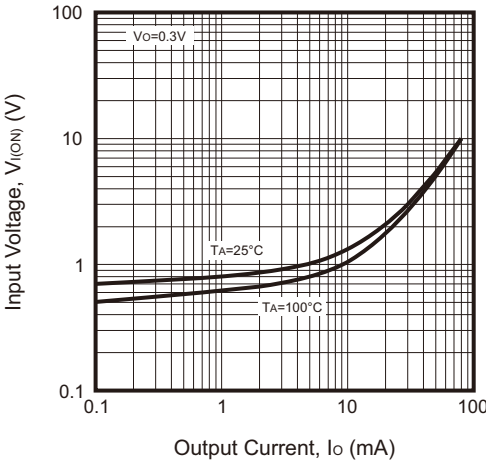


Fig.3 - Input Voltage (Off) Characteristics

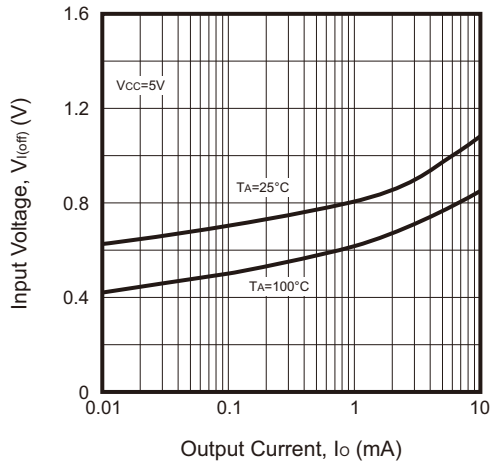


Fig.4 - Output Voltage Characteristics

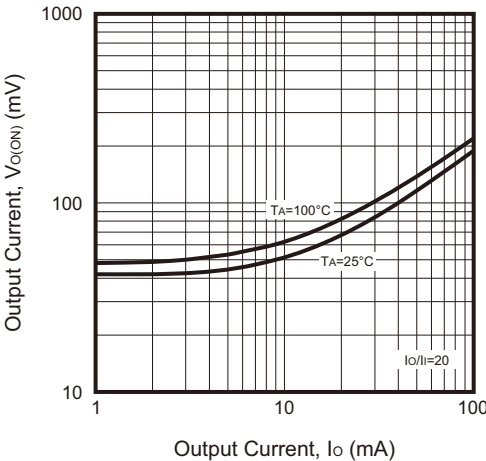
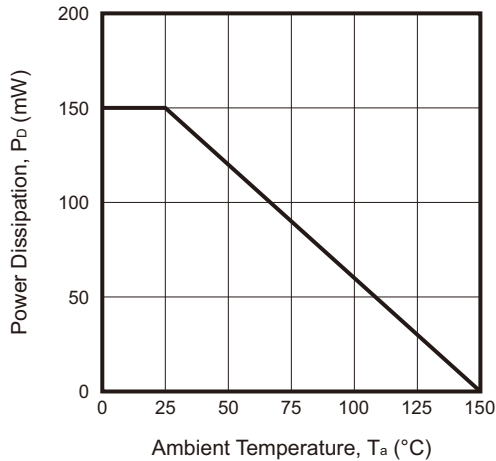


Fig.5 - P_D — T_A Curve



Typical Rating and Characteristic Curves - DTR2 (EMD9-HF)

Fig.6 - DC Current Gain Characteristics

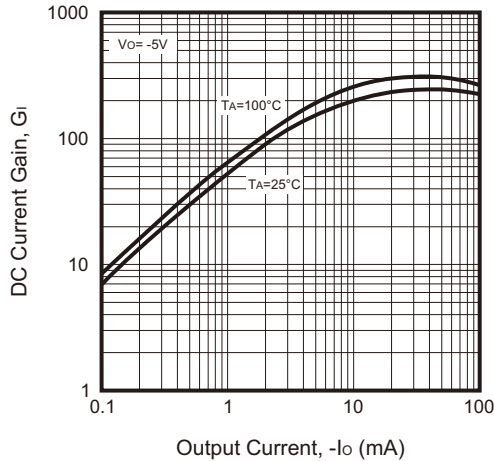


Fig.7 - Input Voltage (On) Characteristics

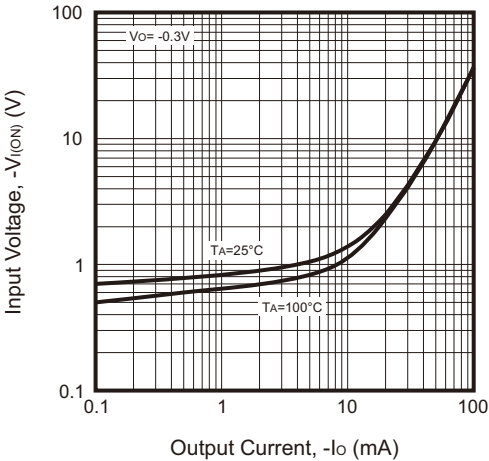


Fig.8 - Input Voltage (Off) Characteristics

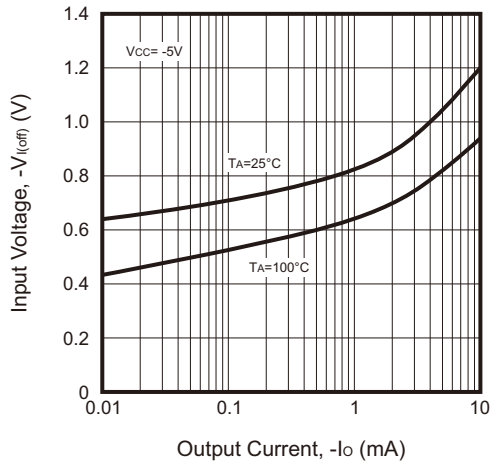


Fig.9 - Output Voltage Characteristics

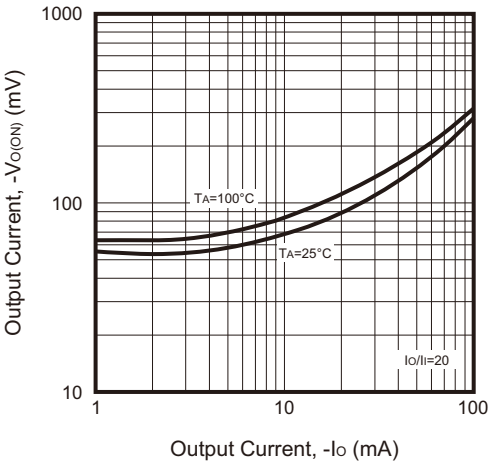
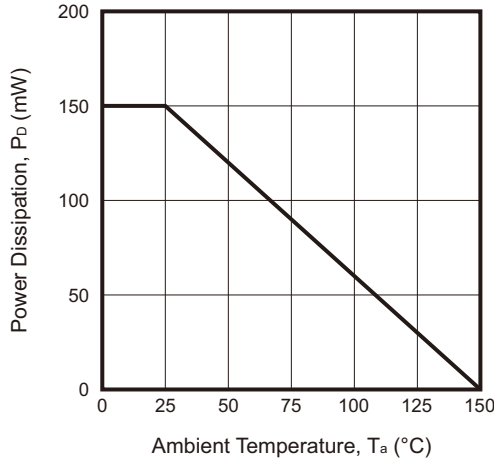
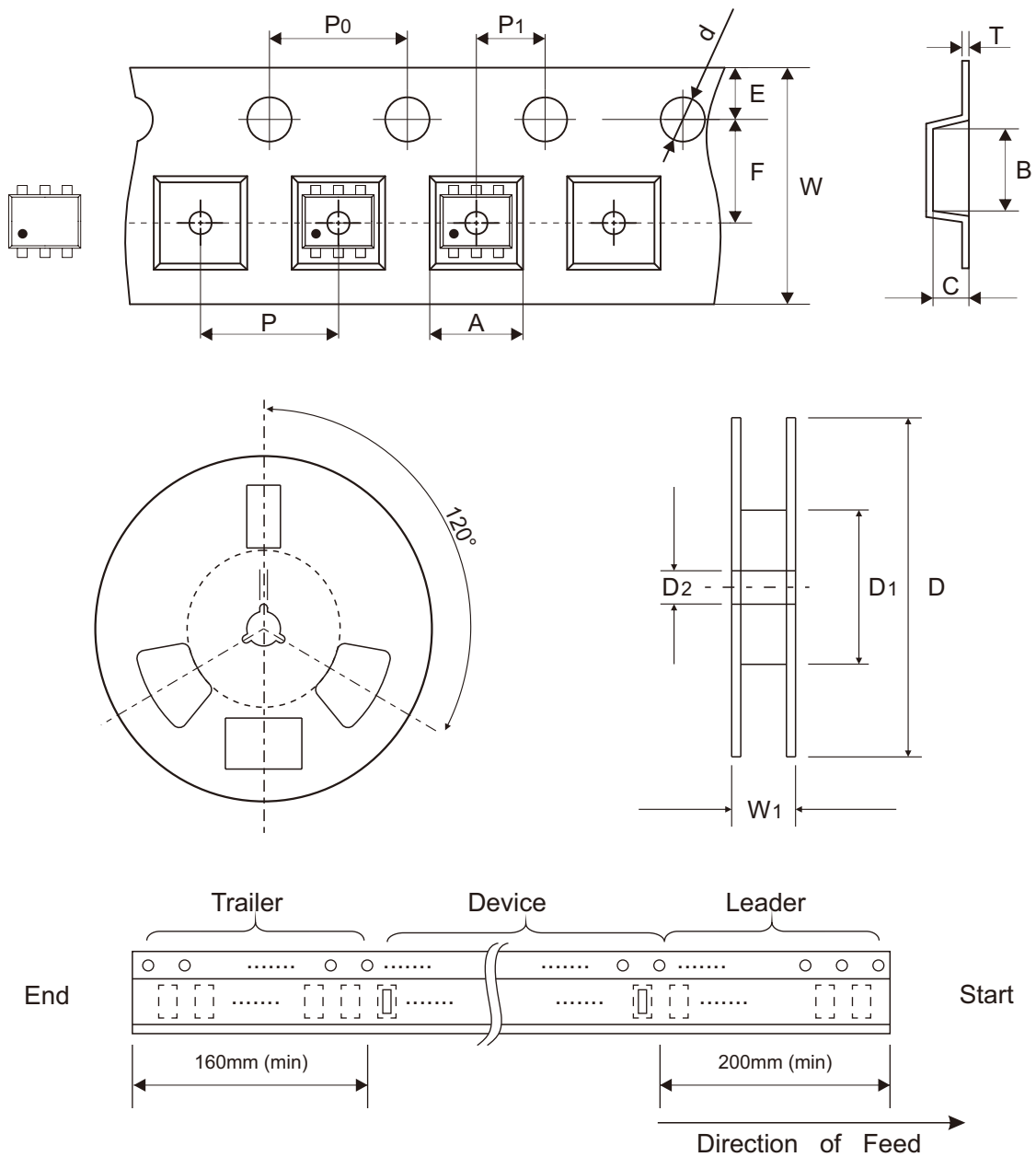


Fig.10 - P_D — T_A Curve



Reel Taping Specification

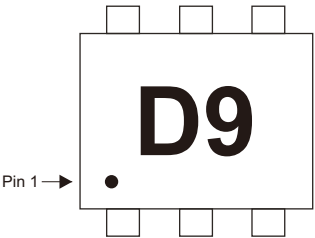


SOT-563	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	1.78 ± 0.05	1.78 ± 0.05	0.69 ± 0.05	1.55 ± 0.05	178.00 ± 2.00	54.40 ± 1.00	13.00 ± 1.00
	(inch)	0.070 ± 0.002	0.070 ± 0.002	0.027 ± 0.002	0.061 ± 0.002	7.008 ± 0.079	2.142 ± 0.039	0.512 ± 0.039

SOT-563	SYMBOL	E	F	P	P0	P1	T	W	W1
	(mm)	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	0.20 ± 0.03	8.00 + 0.30 - 0.10	12.30 ± 1.00
	(inch)	0.069 ± 0.004	0.138 ± 0.002	0.157 ± 0.004	0.157 ± 0.004	0.079 ± 0.002	0.008 ± 0.001	0.315 + 0.012 - 0.004	0.484 ± 0.039

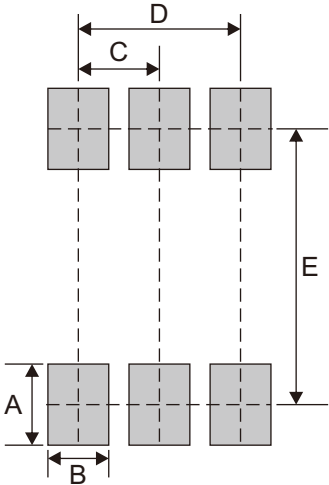
Marking Code

Part Number	Marking Code
EMD9-HF	D9



Suggested P.C.B. PAD Layout

SIZE	SOT-563	
	(mm)	(inch)
A	0.50	0.020
B	0.375	0.015
C	0.50	0.020
D	1.00	0.039
E	1.70	0.067



Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
SOT-563	3,000	7