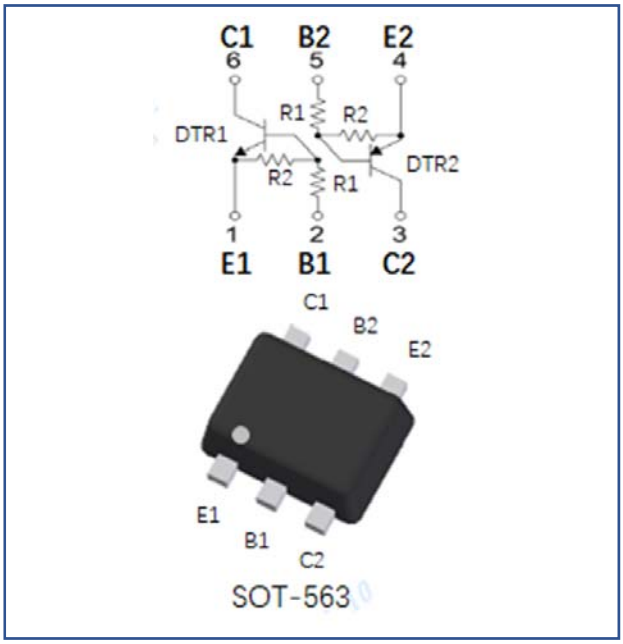
NPN+PNP Digital Transistors (Built-in Resistors)



Features

- Moisture sensitivity level 1
- Halogen free and RoHS compliant
- Surface mount package ideally suited for auto matic Insertion

Application

- Signal amplification
- Switching circuit

Mechanical data

- **Package**: SOT-563
- **Terminals**: Tin plated leads, solderable per J-STD-002 and JESD22-B102

■ **Maximum Ratings** (T_a=25℃ Unless otherwise specified)

DTR1-NPN

Item	Symbol	Unit	Conditions	Value
Device marking code				D2
Supply voltage	V_{CC}	V		50
Input voltage	V_{IN}	V		-10 to +40
Output current	I_O	mA		100
Power dissipation	P_D	mW		150
Junction temperature	T_J	℃		-55 to +150
Storage temperature	T_{STG}	℃		-55 to +150

DTR2-PNP

Item	Symbol	Unit	Conditions	Value
Supply voltage	V_{CC}	V		-50
Input voltage	V_{IN}	V		-40 to +10
Output current	I_O	mA		-100
Power dissipation	P_D	mW		150
Junction temperature	T_J	℃		-55 to +150
Storage temperature	T_{STG}	℃		-55 to +150

■ Electrical Characteristics (Ta=25℃ Unless otherwise specified)

DTR1-NPN

Item	Symbol	Unit	Conditions	Min	Typ	Max
Input voltage	$VI_{(off)}$	V	V_{CC}=5V,Ic=100uA	0.5		
	$VI_{(on)}$	V	V_O=0.2V,Ic=5mA			3
Output voltage	$V_{O(on)}$	V	I_O /Ii =10mA/0.5 mA			0.3
Input current	I_I	mA	V_I=5V			0.36
Output current	$I_{O(off)}$	uA	V_{CC}=50V, Vi=0			0.5
DC current gain	G_I		V_O=5V, I_O =5mA	56		
Input resistance	R_1	kΩ		15.4	22	28.6
Resistance ratio	R_2/R_1			0.8	1	1.2
Transition frequency	f_T	MHz	V_{CE}=10V,I_E=5mA,f=100MHz		250	

DTR2-PNP

Item	Symbol	Unit	Conditions	Min	Typ	Max
Input voltage	$V_{I(off)}$	V	V_{CC}=-5V,Ic=-100uA	-0.5		
	$V_{I(on)}$	V	V_O=-0.2V,Ic=-5mA			-3
Output voltage	$V_{O(on)}$	V	I_O /Ii =-10mA/-0. 5 mA			-0.3
Input current	I_I	mA	V_I=-5V			-0.36
Output current	$I_{O(off)}$	uA	V_{CC}=-50V, Vi=0			-0.5
DC current gain	G_I		V_O=-5V, Io =-5mA	56		
Input resistance	R_1	kΩ		15.4	22	28.6
Resistance ratio	R_2/R_1			0.8	1	1.2
Transition frequency	f_T	MHz	V_{CE}=-10V,I_E=-5mA,f=100MHz		250	

■ Thermal Characteristics

Parameter	Symbol	Unit	Value
Thermal resistance, junction-to-ambient	$R_{\theta J-A}$(1)	℃/W	833
Thermal resistance, junction-to-case	$R_{\theta J-C}$(1)	℃/W	667

Note:
（1）Thermal resistance from junction to ambient and from junction to lead mounted on P.C.B. with 25.4mm*25.4mm copper pad areas

■Ordering Information

Preferred P/N	Packing code	Unit weight(g)	Minimum package(pcs)	Inner box quantity(pcs)	Outer carton quantity(pcs)	Delivery mode
EMD2	F2	Approximate 0.0035	3000	30000	120000	7” reel

■Characteristics

DTR1-NPN

Fig 1：Input Voltage (On) Characteristics

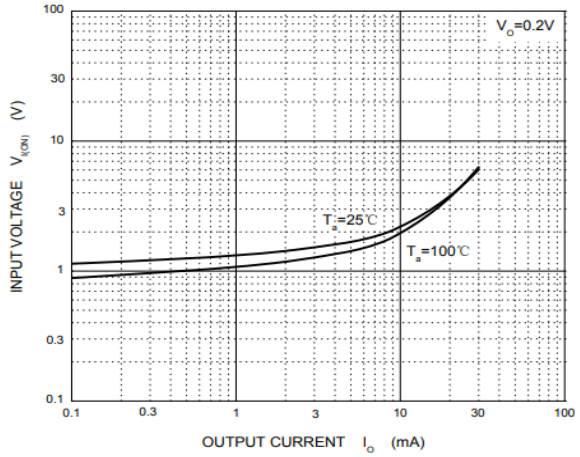


Fig 2： Input Voltage (Off) Characteristics

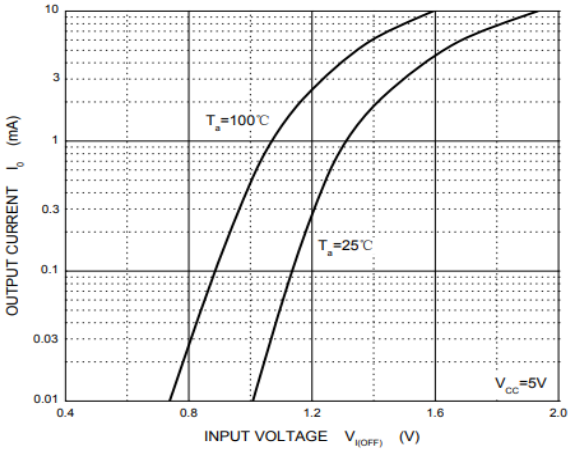


Fig 3：Output Voltage (On) Characteristics

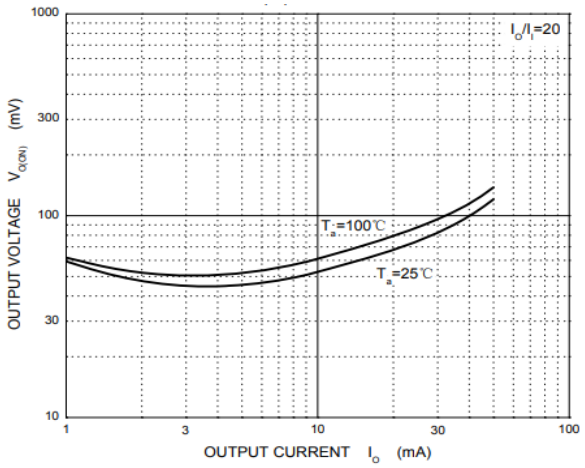


Fig 4：DC Current Gain Characteristics

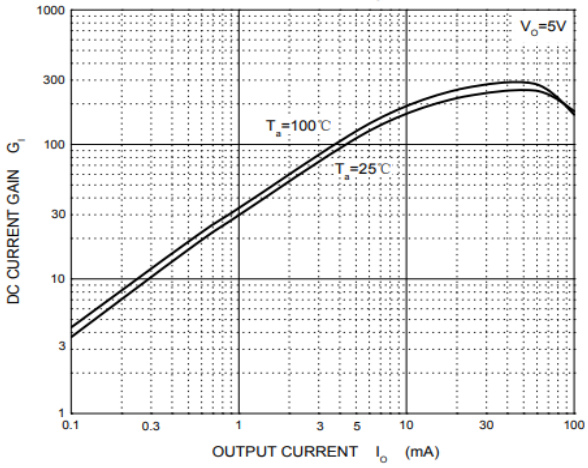
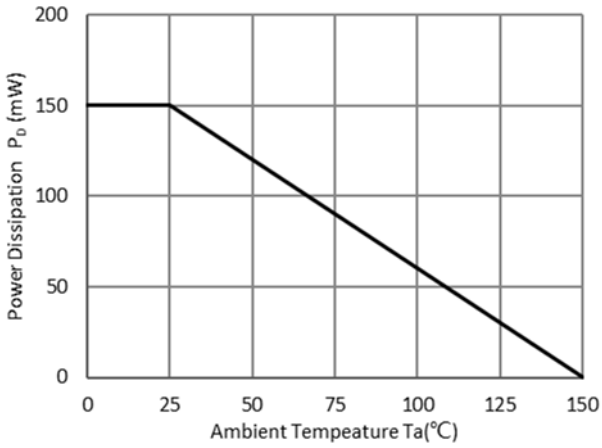


Fig 5：P_D-Ta Curve



DTR2-PNP

Fig 1：Input Voltage (On) Characteristics

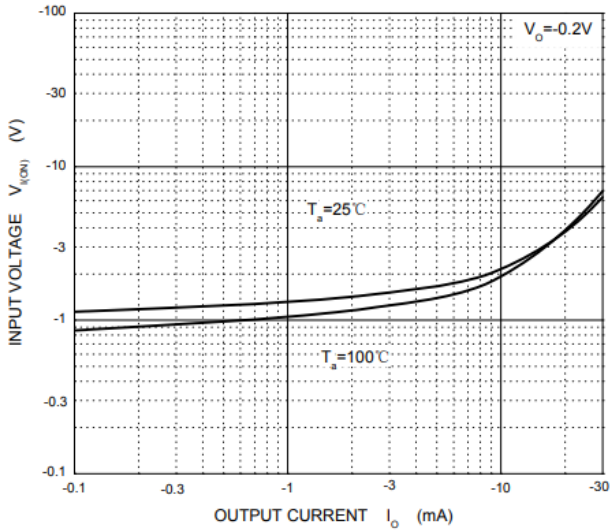


Fig 2： Input Voltage (Off) Characteristics

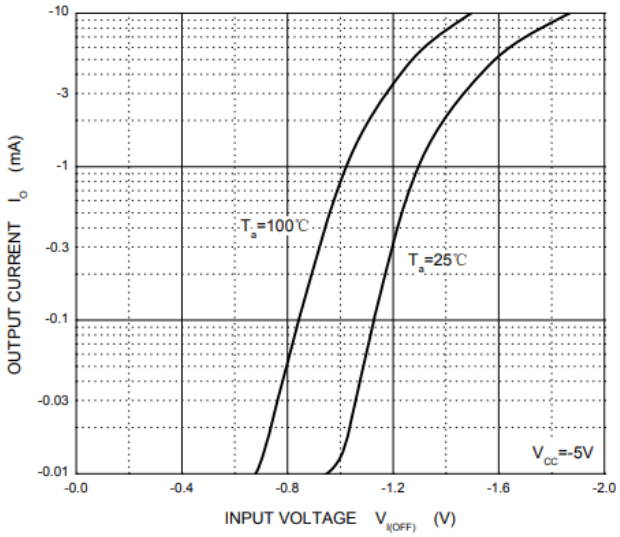


Fig 3：Output Voltage (On) Characteristics

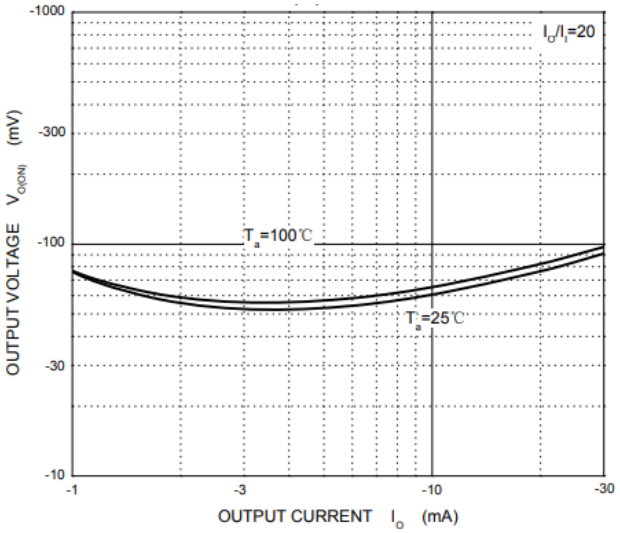


Fig 4：DC Current Gain Characteristics

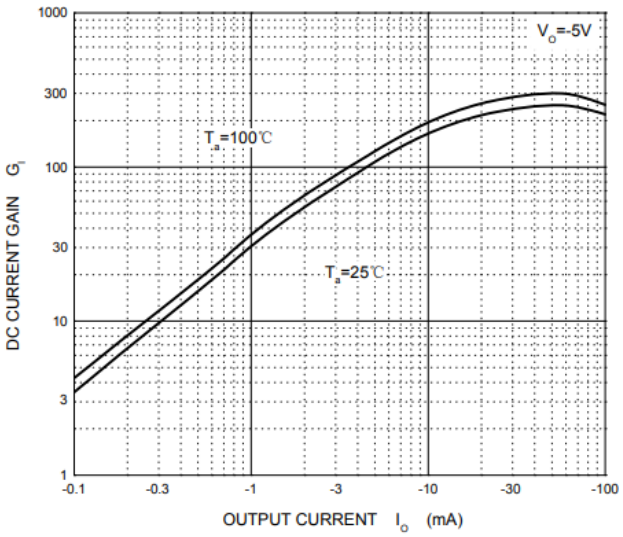
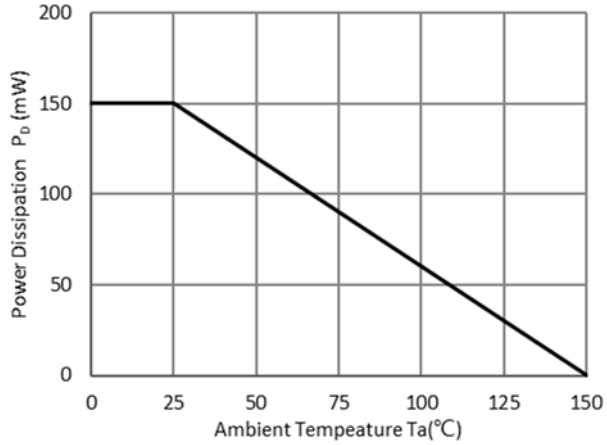
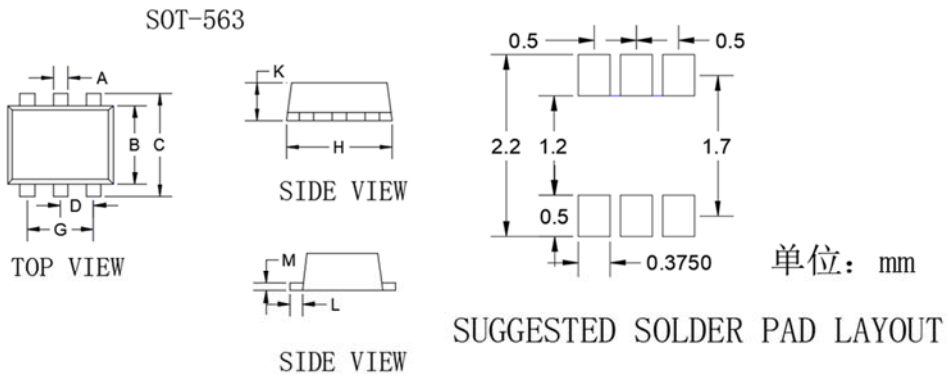


Fig 5：P_D-Ta Curve



■ Outline Dimensions



DIMENSIONS				
DIM	INCHES		MM	
	MIN	MAX	MN	MAX
A	0.006	0.011	0.150	0.300
B	0.043	0.051	1.100	1.300
C	0.059	0.067	1.500	1.700
D	0.016	0.024	0.400	0.600
G	0.035	0.043	0.900	1.100
H	0.059	0.067	1.500	1.700
K	0.021	0.026	0.550	0.650
L	0.004	0.011	0.100	0.300
M	0.004	0.007	0.100	0.180

Note:

1. All dimensions are in millimeters (mm) unless otherwise specified.
[所有尺寸均以毫米为单位，除非另有说明]
2. General tolerances: ±0.10mm unless otherwise specified.
[通用公差为±0.10mm，除非另有说明]
3. Dimensions and tolerances per ASME Y14.5M-2018.
[尺寸和公差遵循 ASME Y14.5M-2018 标准]
4. All dimensions shown are exclusive of burrs and gate residues.
Burrs and gate vestiges shall not exceed 0.15 mm in maximum.
[所有尺寸均不包括毛刺和浇口残留。毛刺与浇口残留的尺寸最大不得超过 0.15mm]
5. Dimension b does not include dambar protrusion of max 0.100 mm per side.
[尺寸b不包括单边最大0.100 MM的中筋凸出部分]
6. Dimensions B and H are the overall extreme outer dimensions of the mold compound. These dimensions exclude mold flash, lead flash, protrusions and burrs but include the maximum allowable mold mismatch.
[B和H是塑封体的外部极限尺寸，不包括包封溢料、内引线溢料、凸出部分以及胶体毛刺，但是包含了包封错位的最大尺寸]
7. Formed leads shall be planar with respect to one another within a maximum of 0.076 mm relative to the seating plane.
[成型的管脚应为同一平面，共面性最大为0.1mm]
8. ★It is the key size.
[★ 标记为关键尺寸]

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