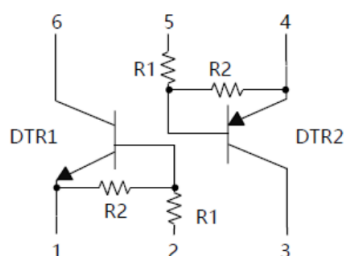
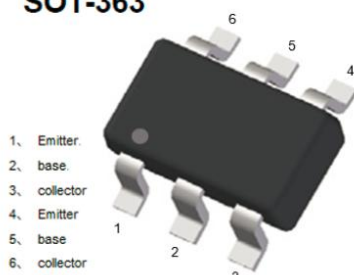


Dual NPN+PNP Digital Transistors (Built-in Resistors)



SOT-363



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-363
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102

■ Maximum Ratings ($T_a=25^{\circ}\text{C}$ Unless otherwise specified)

DTR1-NPN

Item	Symbol	Unit	Conditions	Value
Device marking code				D16
Collector-base voltage	V_{CC}	V		50
Collector-emitter voltage	V_{IN}	V		-10 to +40
Collector current	I_o	mA		100
Power dissipation	P_D	mW		150
Operation junction temperature	T_J	$^{\circ}\text{C}$		-55 to +150
Storage temperature	T_{STG}	$^{\circ}\text{C}$		-55 to +150

DTR2-PNP

Item	Symbol	Unit	Conditions	Value
Collector-base voltage	V_{CC}	V		-50
Collector-emitter voltage	V_{IN}	V		-40 to +10
Collector current	I_o	mA		-100
Power dissipation	P_D	mW		150
Operation junction temperature	T_J	$^{\circ}\text{C}$		-55 to +150
Storage temperature	T_{STG}	$^{\circ}\text{C}$		-55 to +150



UMD16N

RoHS
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■ Electrical Characteristics (T_a=25°C Unless otherwise specified)

DTR1-NPN

Item	Symbol	Unit	Conditions	Min	Typ	Max
Input voltage	V _{I(off)}	V	V _{CC} =5V, I _O =100μA	0.4		
	V _{I(on)}	V	V _O =0.3V, I _O =2mA			2.5
Output voltage	V _{O(on)}	V	I _O / I _I =10mA/0.5 mA			0.3
Input current	I _I	μA	V _I =5V			360
Output current	I _{O(off)}	μA	V _{CC} =50V, V _I =0			0.1
DC current gain	G _I		V _O =5V, I _O =5mA	56		
Input resistance	R _I	kΩ		15.4	22	28.6
Resistance ratio	R ₂ /R ₁			1.7	2.1	2.6
Transition frequency	f _T	MHz	V _O =10V, I _O =5mA, f=100MHz		250	

DTR2-PNP

Item	Symbol	Unit	Conditions	Min	Typ	Max
Input voltage	V _{I(off)}	V	V _{CC} =-5V, I _O =-100μA	-0.4		
	V _{I(on)}	V	V _O =-0.3V, I _O =-2mA			-2.5
Output voltage	V _{O(on)}	V	I _O / I _I =-10mA/-0.5mA			-0.3
Input current	I _I	μA	V _I =-5V			-360
Output current	I _{O(off)}	μA	V _{CC} =-50V, V _I =0			-0.1
DC current gain	G _I		V _O =-5V, I _O =-5mA	56		
Input resistance	R _I	kΩ		15.4	22	28.6
Resistance ratio	R ₂ /R ₁			1.7	2.1	2.6
Transition frequency	f _T	MHz	V _O =-10V, I _O =-5mA, f=100MHz		250	

■ Thermal Characteristics

Parameter	Symbol	Unit	Value
Thermal resistance, junction-to-ambient	R _{θJA} ⁽¹⁾	°C/W	834
Thermal resistance, junction-to-case	R _{θJC} ⁽¹⁾	°C/W	667

Note:

(1) Device mounted on PCB, single-sided copper, with standard footprint

■ Characteristics

DTR1-NPN

Fig 1: Input Voltage (On) Characteristics

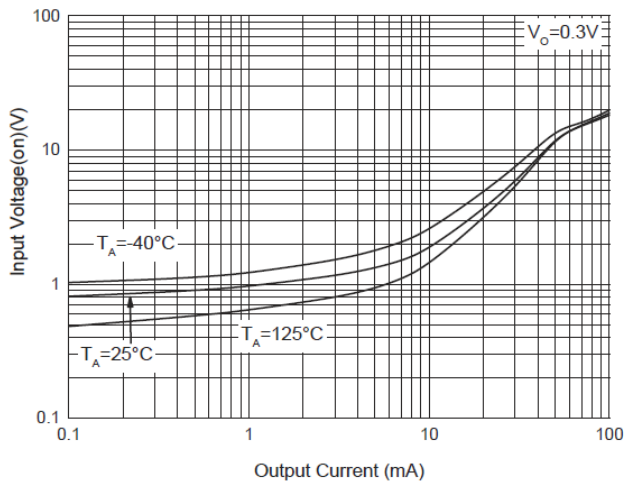


Fig 2: Input Voltage (Off) Characteristic

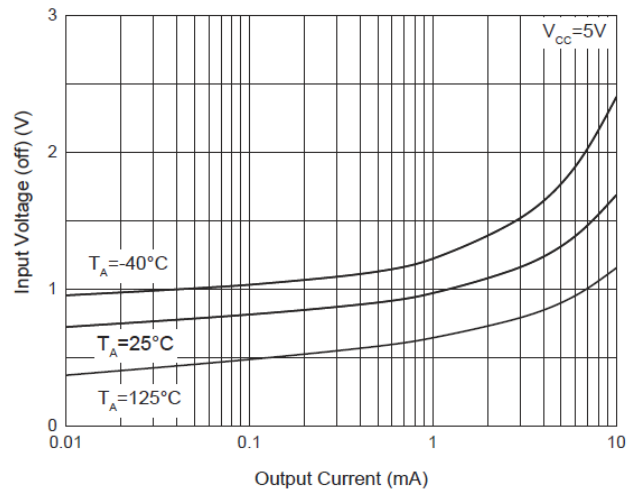


Fig 3: DC Current Gain Characteristics

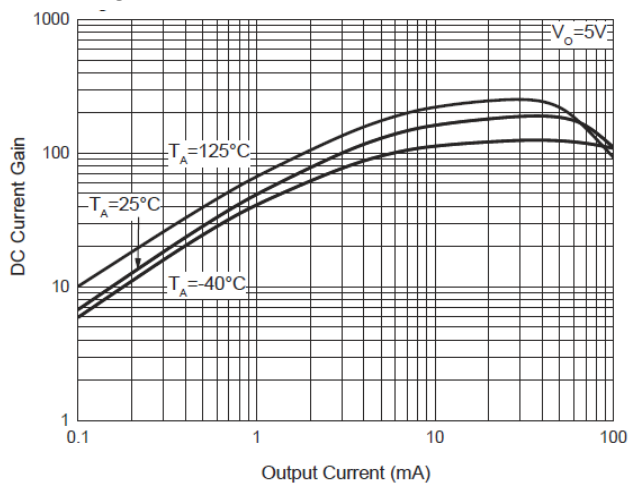


Fig 4: Output Voltage Characteristics

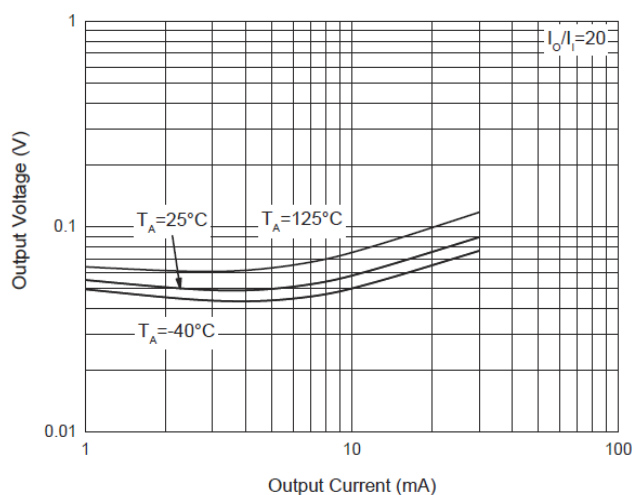
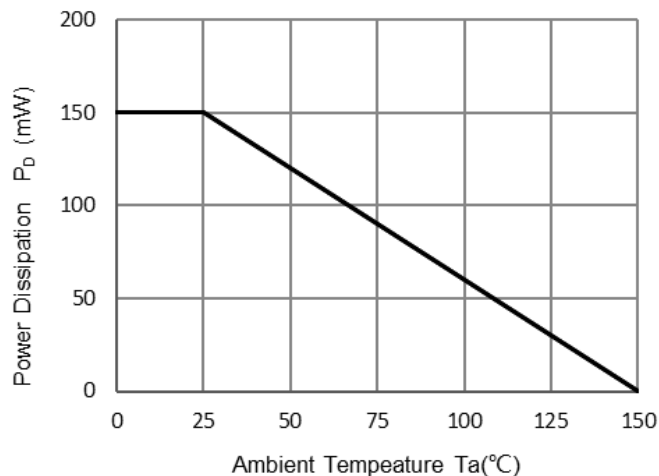


Fig 5: P_D-T_a Curve



DTR2-PNP

Fig 5: Input Voltage (On) Characteristics

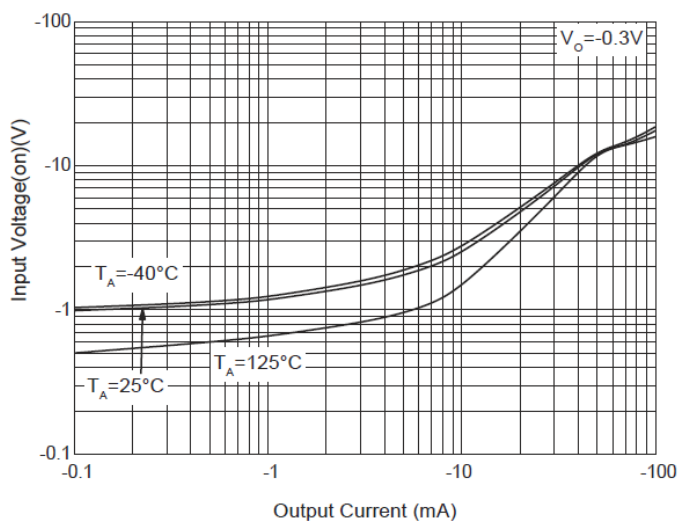


Fig 6: Input Voltage (Off) Characteristic

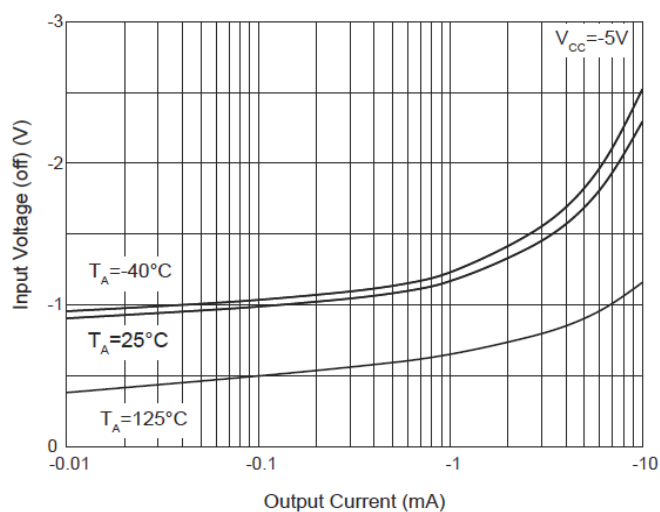


Fig 7: DC Current Gain Characteristics

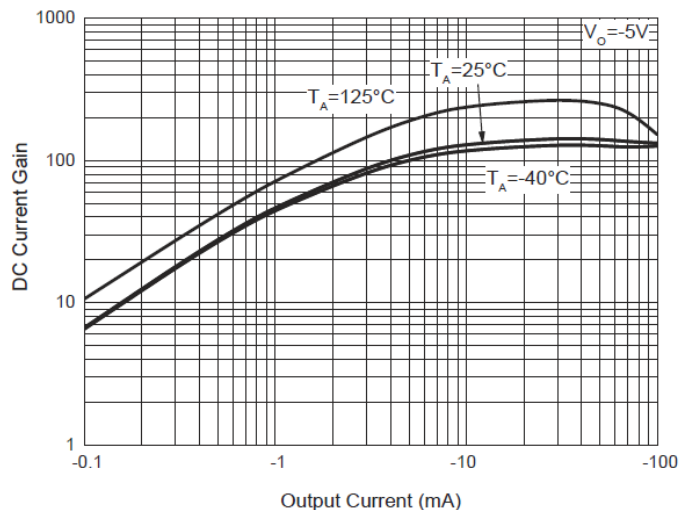


Fig 8: Output Voltage Characteristics

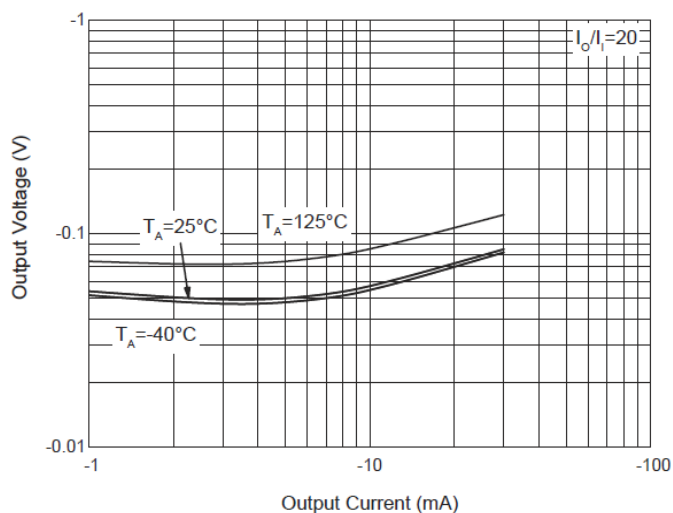
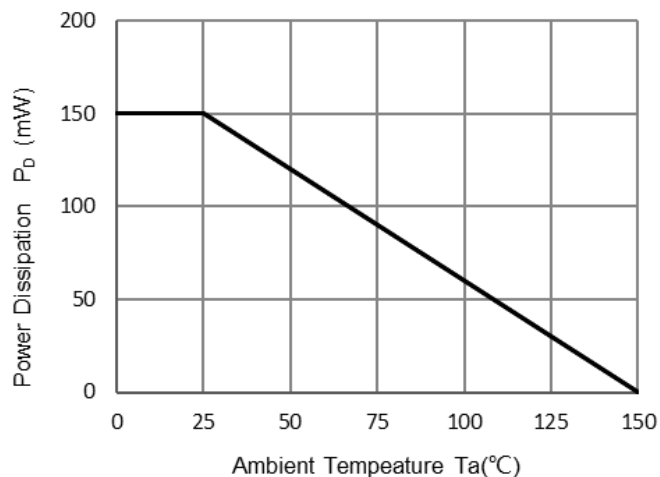


Fig 5: P_D - T_a Curve





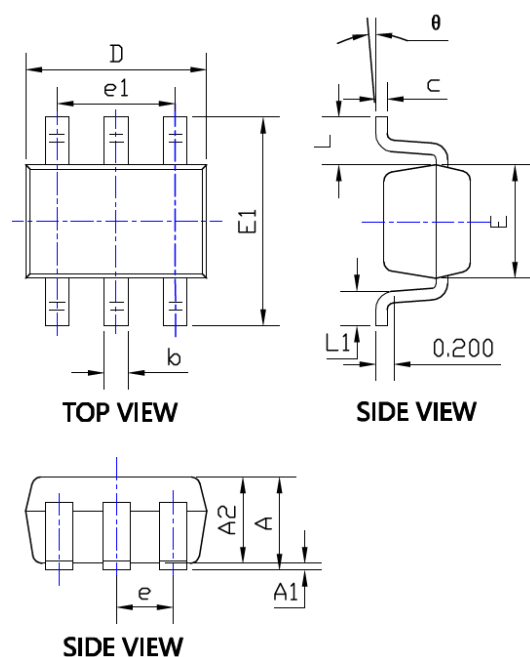
UMD16N

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■ Ordering Information

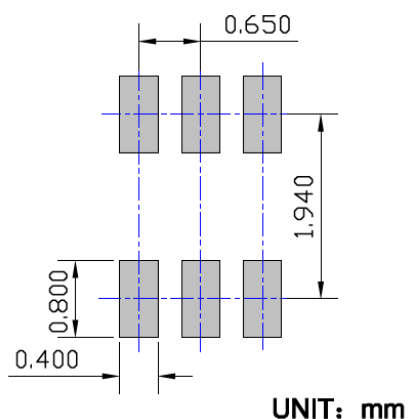
Preferred P/N	Packing code	Unit weight(g)	Minimum package(pcs)	Inner box quantity(pcs)	Outer carton quantity(pcs)	Delivery mode
UMD16N	F2	Approximate 0.009	3000	30000	120000	7" reel
UMD16N	F3	Approximate 0.009	10000	/	210000	7" reel

■ Outline Dimensions



DIMENSIONS				
SYMBOL	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.035	0.043	0.900	1.100
A1	0.000	0.004	0.000	0.100
A2	0.035	0.039	0.900	1.000
b	0.006	0.014	0.150	0.350
c	0.004	0.010	0.100	0.250
D	0.071	0.087	1.800	2.200
E	0.045	0.053	1.150	1.350
E1	0.085	0.096	2.150	2.450
e	0.026TYP		0.650TYP	
e1	0.047	0.055	1.200	1.400
L	0.021REF		0.525REF	
L1	0.010	0.018	0.260	0.460
θ	0°	8°	0°	8°

■ Suggested Pad Layout





Disclaimer

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