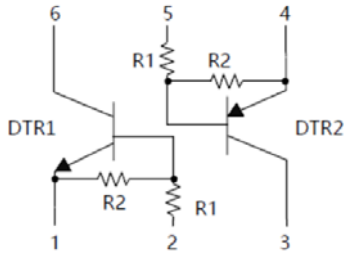
UMD16N

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



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-363
- **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				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	℃		-55 to +150
Storage temperature	T_{STG}	℃		-55 to +150

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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	℃		-55 to +150
Storage temperature	T_{STG}	℃		-55 to +150

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

DTR1-NPN

Item	Symbol	Unit	Conditions	Min	Typ	Max
Input voltage	$V_{I(off)}$	V	V_{CC}=5V,I_O=100uA	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	uA	V_I=5V			120
Output current	$I_{O(off)}$	uA	V_{CC}=50V, V_I=0			0.1
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			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=-100uA	-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	A	V_I=-5V			-120
Output current	$I_{O(off)}$	uA	V_{CC}=-50V, V_I=0			-0.1
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			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	RθJ-A(1)	℃/W	834
Thermal resistance, junction-to-case	RθJ-C(1)	℃/W	667

Note:

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

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■Characteristics

DTR1-NPN

Fig 1：Input Voltage (On) Characteristics

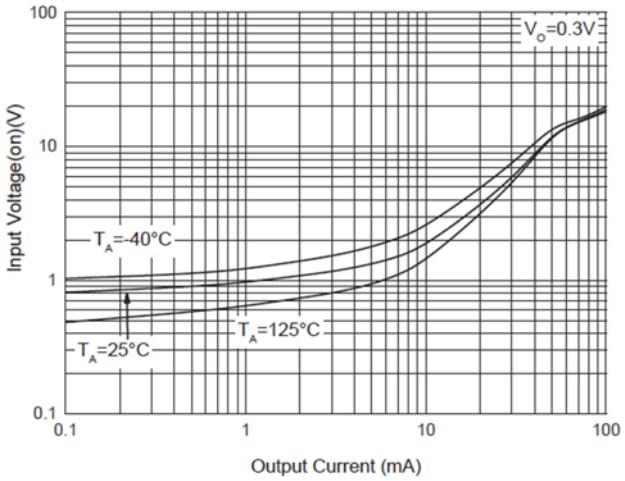


Fig 2：Input Voltage (Off) Characteristic

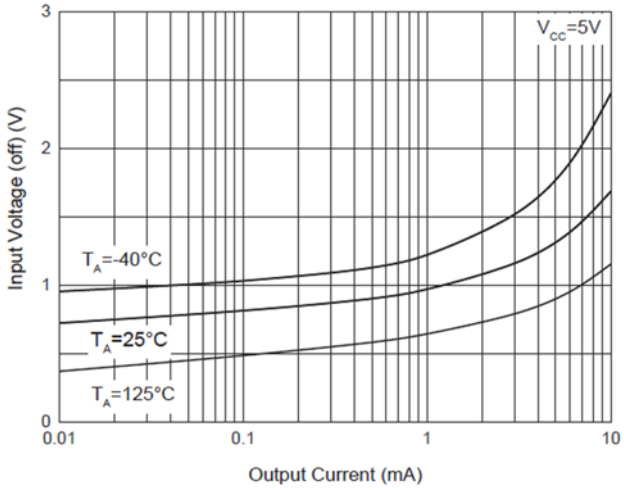


Fig 3：DC Current Gain Characteristics

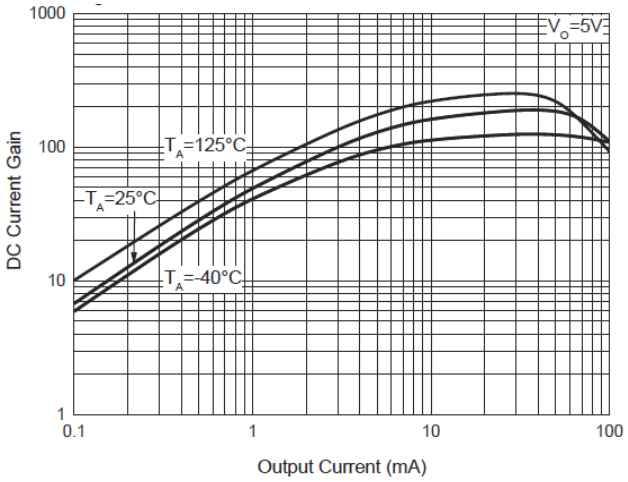


Fig 4：Output Voltage Characteristics

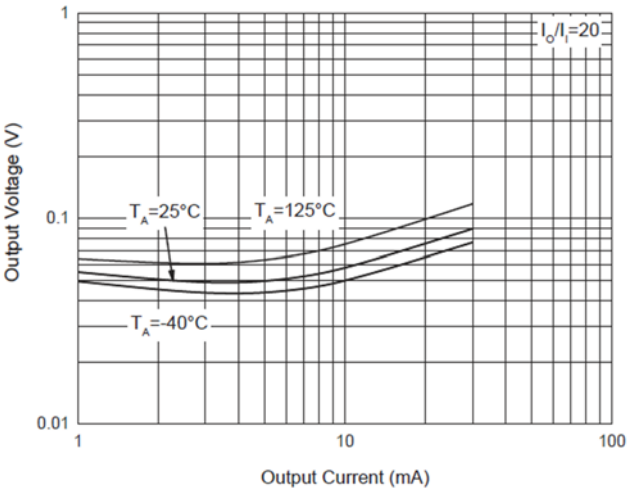
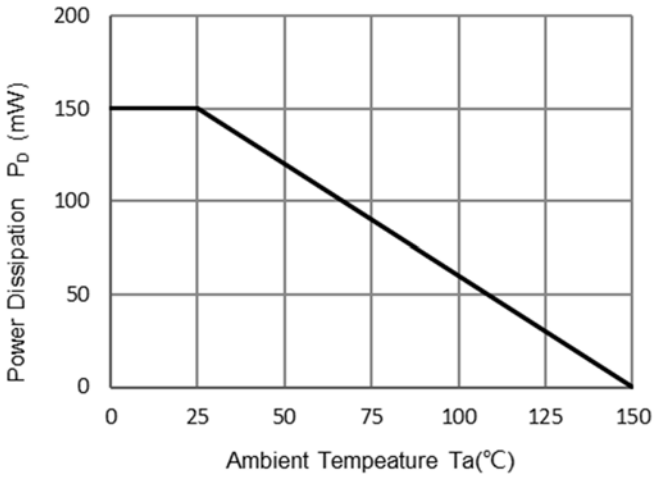


Fig 5：P_D-Ta Curve



DTR2-PNP

Fig 5：Input Voltage (On) Characteristics

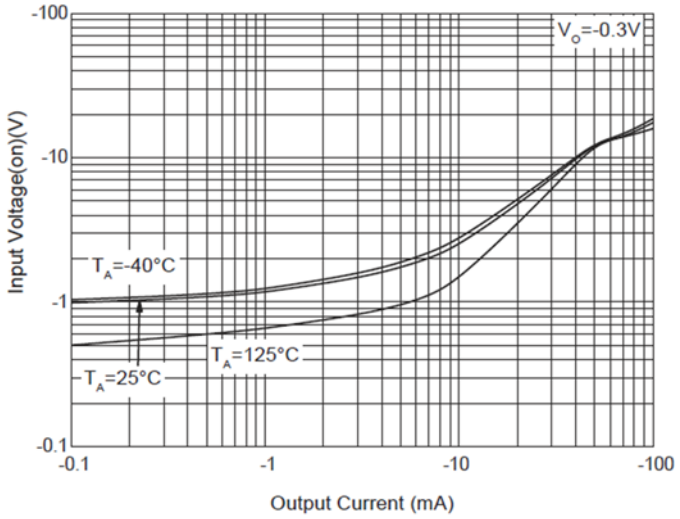


Fig 6：Input Voltage (Off) Characteristic

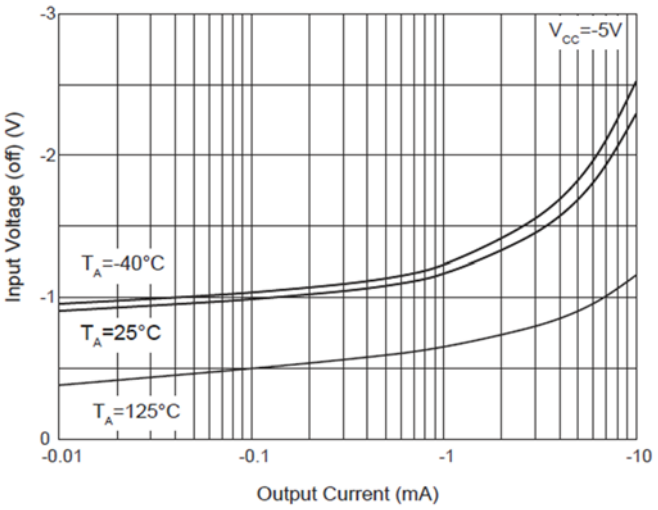


Fig 7：DC Current Gain Characteristics

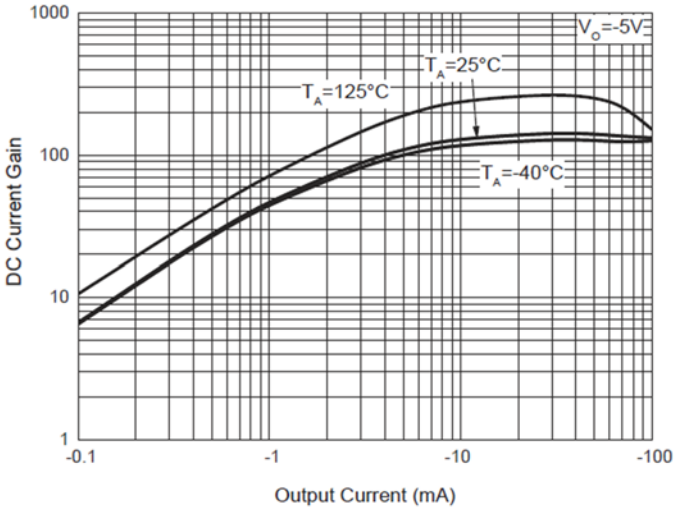


Fig 8：Output Voltage Characteristics

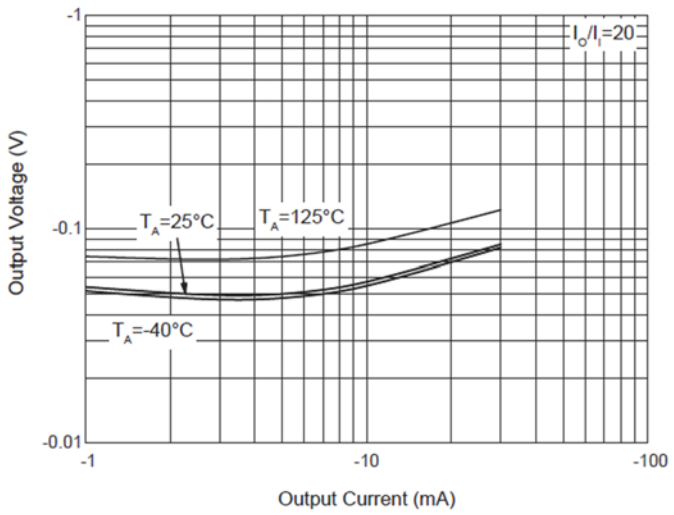
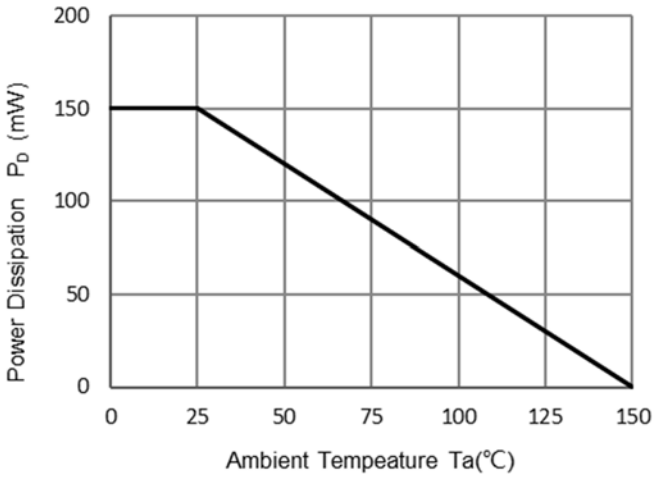


Fig 5：P_D-Ta Curve

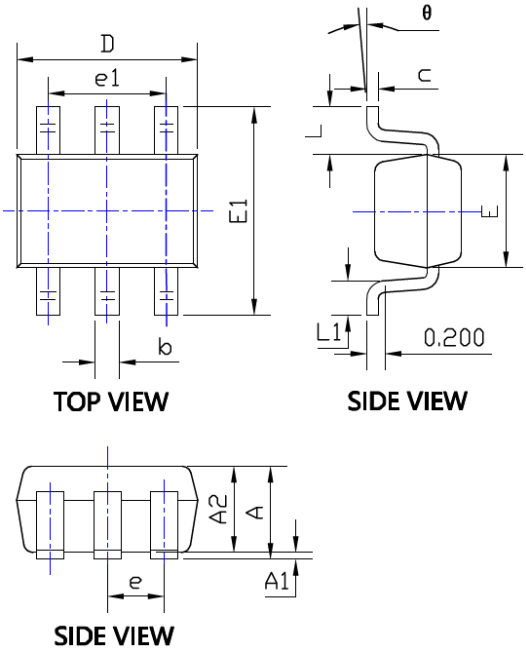


UMD16N

■Ordering Information

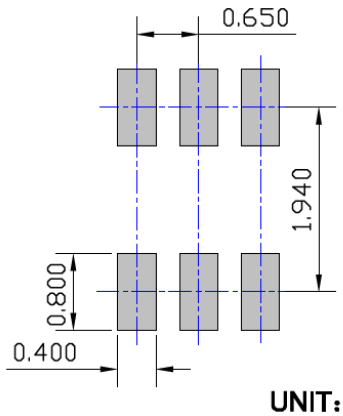
Preferred P/N	Packing code	Unit weight(g)	Minimum package(pcs)	Inner box quantity(pcs)	Outer carton quantity(pcs)	Delivery mode
UMD16N	F2	Approximate 0.009	3000	30000	120000	7” reel
UMD16N	F3	Approximate 0.009	10000	/	210000	7” reel

■ 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



UNIT：mm

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