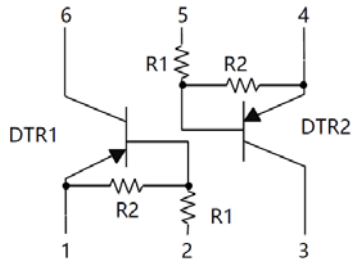
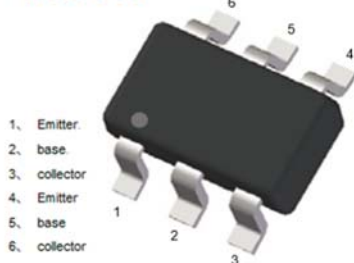


Dual NPN+PNP Digital Transistors (Built-in Resistors)



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)

Item	Symbol	Unit	Conditions	Value
Device marking code				B13
Collector-base voltage	V_{CC}	V		-50
Collector-emitter voltage	V_{IN}	V		-30 to +5
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

■ **Electrical Characteristics** ($T_a=25^{\circ}\text{C}$ Unless otherwise specified)

Item	Symbol	Unit	Conditions	Min	Typ	Max
Input voltage	$V_{I(\text{off})}$	V	$V_{CC}=-5\text{V}, I_c=-100\mu\text{A}$	-0.5		
	$V_{I(\text{on})}$	V	$V_o=-0.3\text{V}, I_c=-2\text{mA}$			-1.3
Output voltage	$V_{O(\text{on})}$	V	$I_o / I_i = -5\text{mA} / -0.25\text{mA}$			-0.3
Input current	I_i	mA	$V_i=-5\text{V}$			-1.8
Output current	$I_{O(\text{off})}$	μA	$V_{CC}=-50\text{V}, V_i=0$			-0.5
DC current gain	G_i		$V_o=-5\text{V}, I_o = -10\text{mA}$	80		
Input resistance	R_1	$\text{k}\Omega$		3.29	4.7	6.11
Resistance ratio	R_2/R_1			8	10	12
Transition frequency	f_T	MHz	$V_o=-10\text{V}, I_o=-5\text{mA}, f=100\text{MHz}$		250	

■ **Thermal Characteristics**

Parameter	Symbol	Unit	Value
Thermal resistance, junction-to-ambient	$R_{\theta J-A}^{(1)}$	$^{\circ}\text{C}/\text{W}$	834
Thermal resistance, junction-to-case	$R_{\theta J-C}^{(1)}$	$^{\circ}\text{C}/\text{W}$	667

Note:

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

■ Characteristics

Fig 1: Input Voltage (On) Characteristics

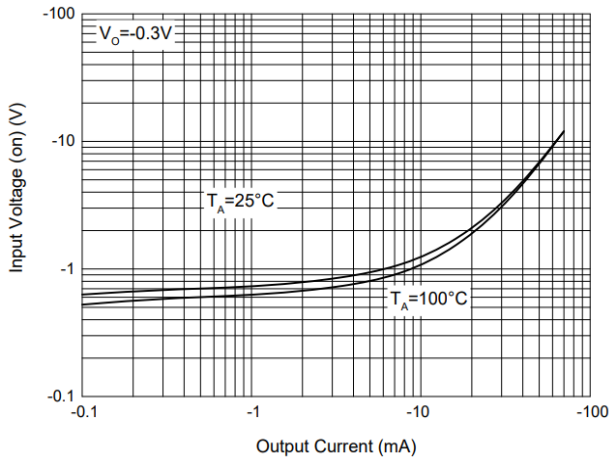


Fig 2: Input Voltage (Off) Characteristic

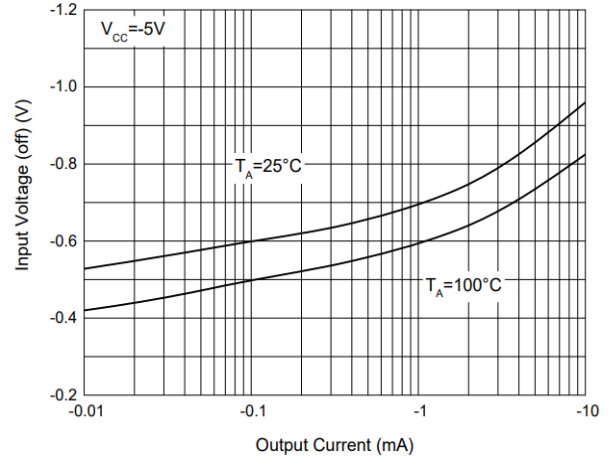


Fig 3: DC Current Gain Characteristics

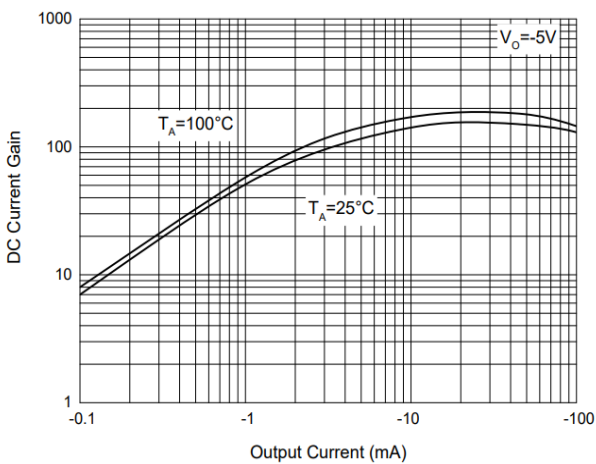


Fig 4: Output Voltage Characteristics

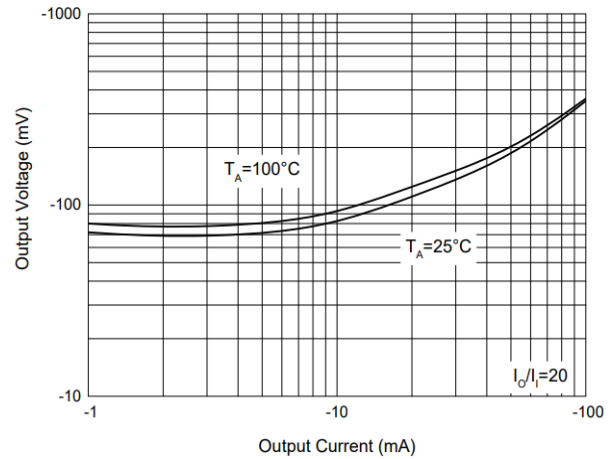
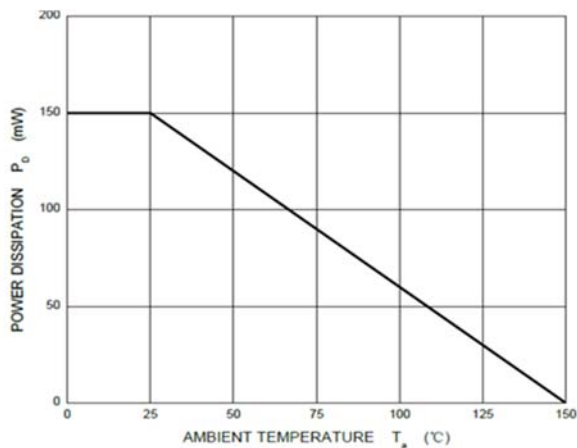


Fig 5: PD-Ta Curve





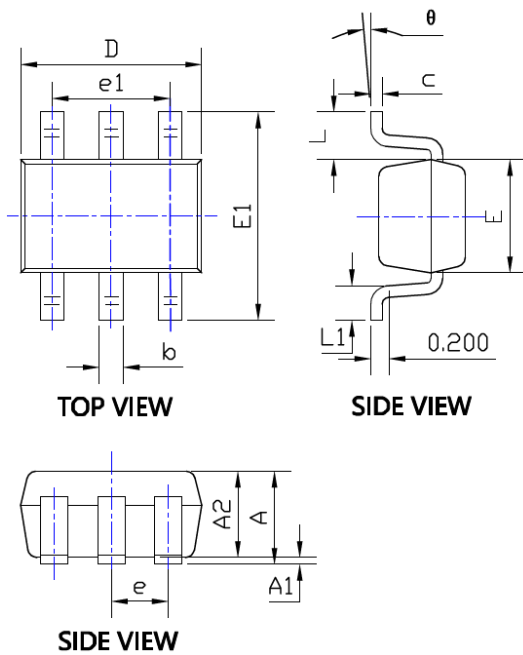
UMB13N

RoHS
COMPLIANT

■ Ordering Information

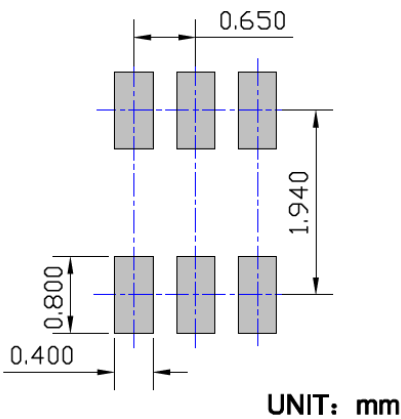
Prefered P/N	Packing code	Unit weight(g)	Minimum package(pcs)	Inner box quantity(pcs)	Outer carton quantity(pcs)	Delivery mode
UMB13N	F2	Approximate 0.009	3000	30000	120000	7" reel
UMB13N	F3	Approximate 0.009	10000	/	210000	7" reel

■ Outline Dimensions



SYMBOL	DIMENSIONS			
	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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