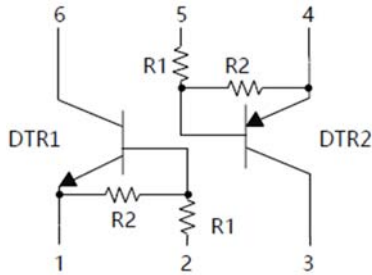


Dual NPN+PNP Digital Transistors (Built-in Resistors)



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
- **Marking code:** D5

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

DTr1

Item	Symbol	Unit	Conditions	Value
Collector-base voltage	V_{CC}	V		50
Collector-emitter voltage	V_{IN}	V		-10 to +40
Output current	$I_{C(MAX)}$	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

Item	Symbol	Unit	Conditions	Value
Collector-base voltage	V_{CC}	V		-50
Collector-emitter voltage	V_{IN}	V		-20 to +7
Output current	$I_{C(MAX)}$	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



UMD5N

■ 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 _c =100uA	0.5		
	V _{I(on)}	V	V _O =0.3V, I _c =2mA			3.0
Output voltage	V _{O(on)}	V	I _o / I _i = 10mA/0.5mA			0.3
Input current	I _i	mA	V _i =5V			0.18
Output current	I _{O(off)}	uA	V _{CC} =50V, V _i =0			0.5
DC current gain	G _i		V _O =5V, I _o =5mA	68		
Input resistance	R ₁	kΩ		32.9	47	61.1
Resistance ratio	R ₂ /R ₁			0.8	1.0	1.2
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 _c =-100uA	-0.3		
	V _{I(on)}	V	V _O =-0.3V, I _c =-20mA			-2.5
Output voltage	V _{O(on)}	V	I _o / I _i = -10mA/-0.5 mA			-0.3
Input current	I _i	mA	V _i =-5V			-1.8
Output current	I _{O(off)}	uA	V _{CC} =-50V, V _i =0			-0.5
DC current gain	G _i		V _O =-5V, I _o =-10mA	30		
Input resistance	R ₁	kΩ		3.29	4.7	6.11
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

■ Ordering Information

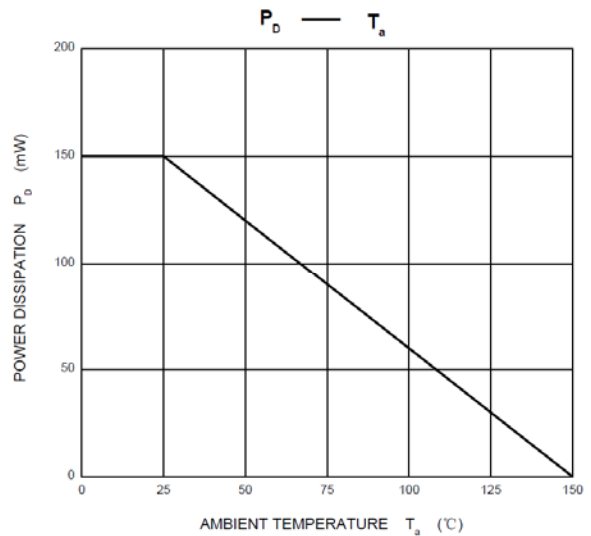
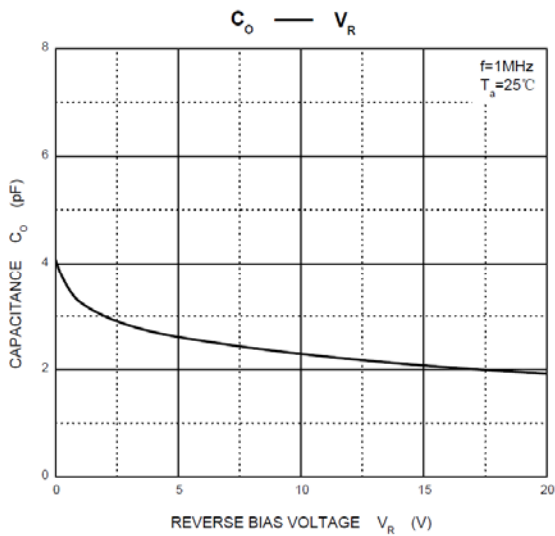
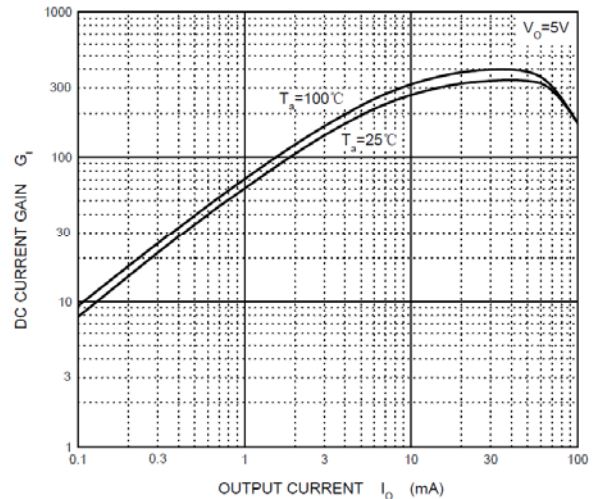
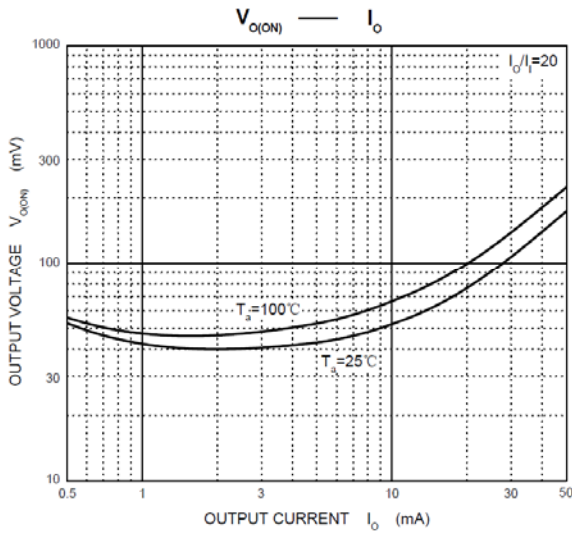
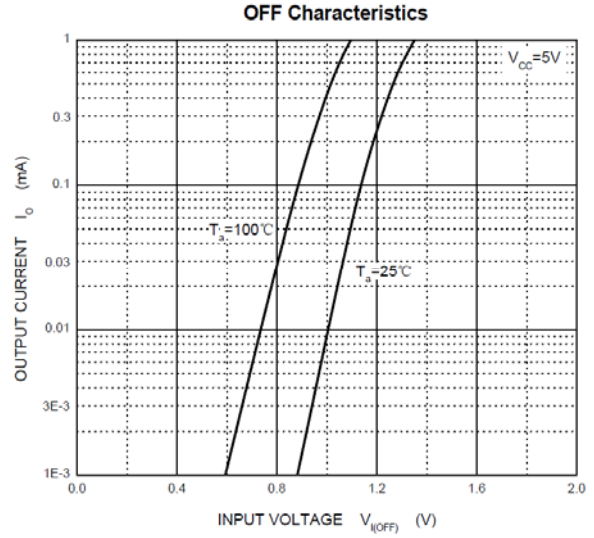
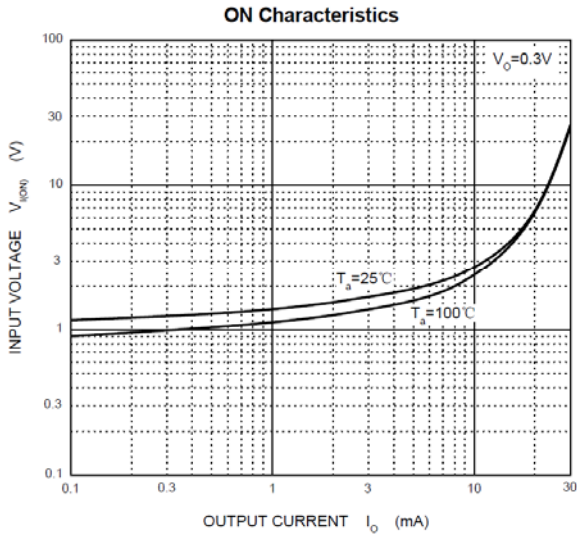
Preferred P/N	Packing code	Unit weight(g)	Minimum package(pcs)	Inner box quantity(pcs)	Outer carton quantity(pcs)	Delivery mode
UMD5N	F2	Approximate 0.009	3000	30000	120000	7" reel
UMD5N	F3	Approximate 0.009	10000	/	210000	7" reel



UMD5N

■Characteristics(Typical)

DTR1-NPN

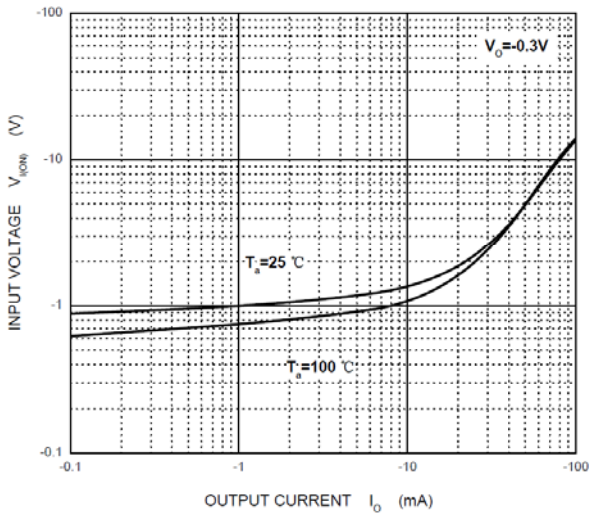




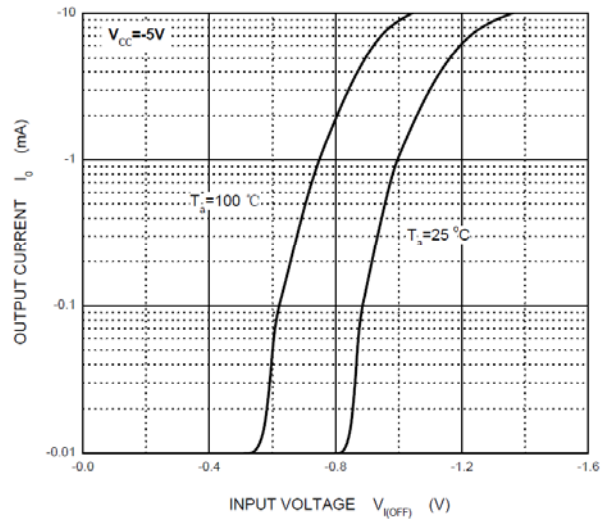
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■Characteristics(Typical) DTR2-PNP

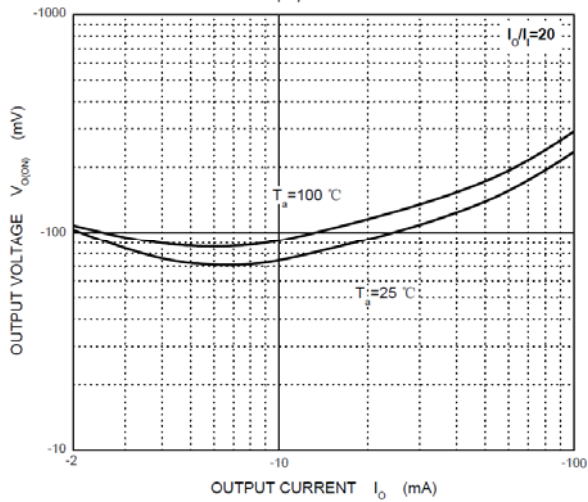
ON Characteristics



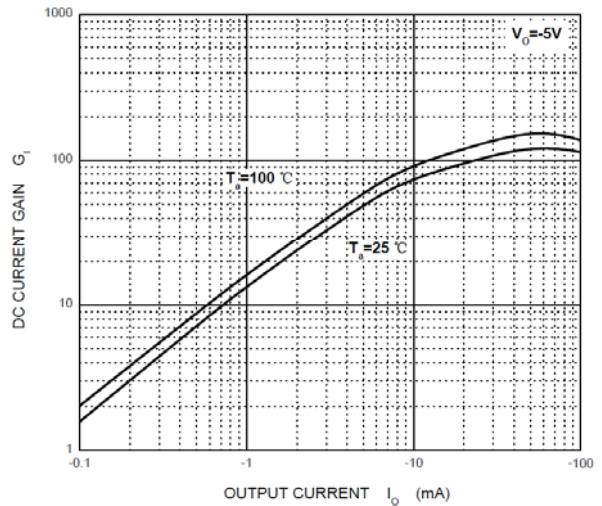
OFF Characteristics



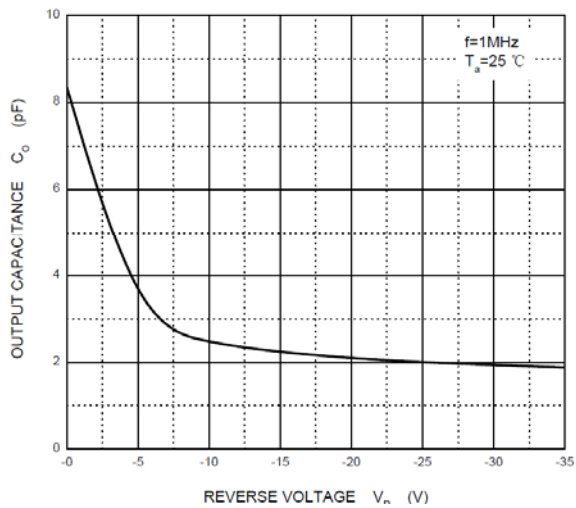
$V_{O(ON)}$ — I_o



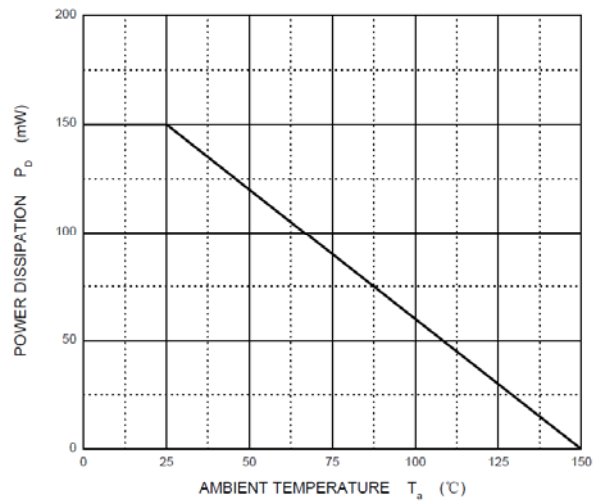
G_1 — I_o



C_o — V_R



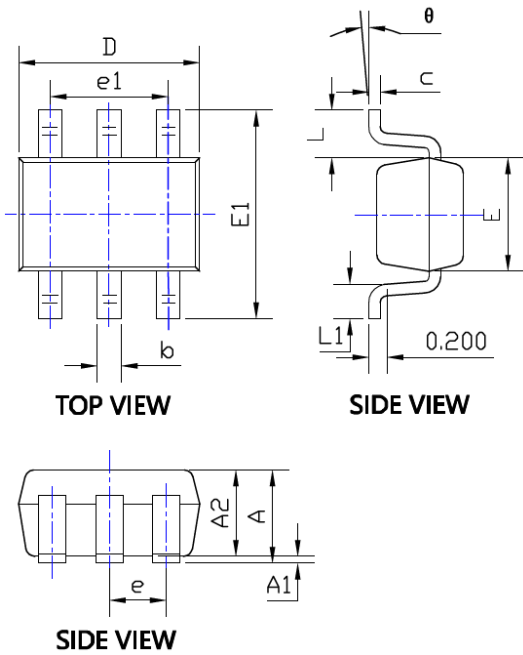
P_D — T_a





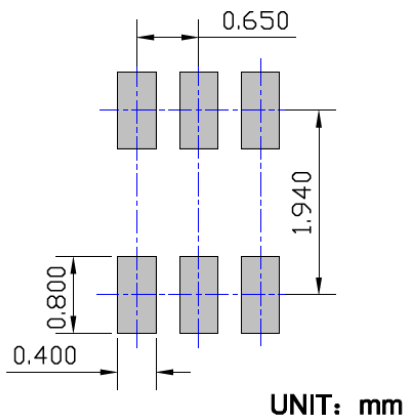
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■ Outline Dimensions



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





UMD5N

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