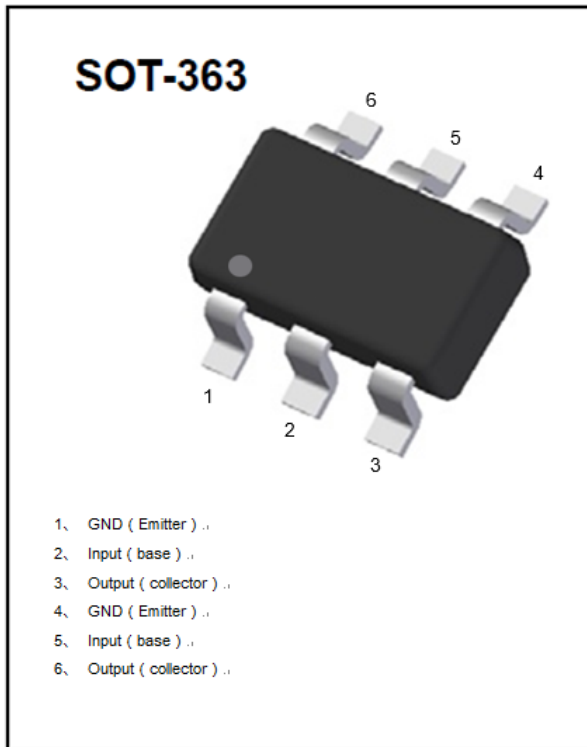


Digital Transistors (Built-in Resistors)



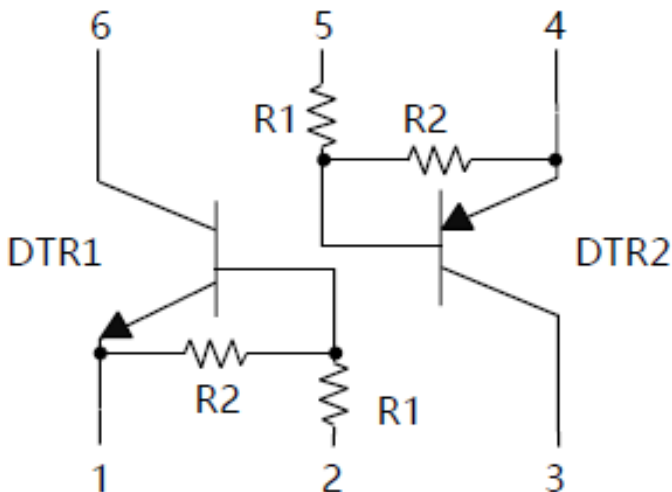
Features

- Epoxy meets UL-94 V-0 flammability rating
- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors
- Surface mount package ideally Suited for Automatic Insertion

Mechanical Data

- **Package:** SOT-363
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** D2

■Equivalent circuit





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■Maximum Ratings (Ta=25°C Unless otherwise specified)

DTR1-NPN

ITEM	SYMBOL	UNIT	CONDITIONS	VALUE
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 (Single)	T_j	°C		150
Storage Temperature	T_{STG}	°C		-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	°C		150
Storage Temperature	T_{STG}	°C		-55 to +150

■Electrical Characteristics (Ta=25°C unless otherwise specified)

DTR1-NPN

ITEM	SYMBOL	UNIT	CONDITIONS	MIN	TYP	MAX
Input voltage	$V_{I(off)}$	V	$V_{CC}=5V, I_c=100\mu A$	0.5	-	-
	$V_{I(on)}$	V	$V_o=0.2V, I_c=5mA$	-	-	3
Output voltage	$V_{O(on)}$	V	$I_o / I_i = 10mA / 0.5 mA$	-	-	0.3
Input current	I_i	mA	$V_i=5V$	-	-	0.36
Output current	$I_{O(off)}$	μA	$V_{CC}=50V, V_i=0$	-	-	0.5
DC current gain	G_i		$V_o=5V, I_o = 5mA$	56	-	-
Input resistance	R_1	k Ω		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	-



UMD2N

DTR2-PNP

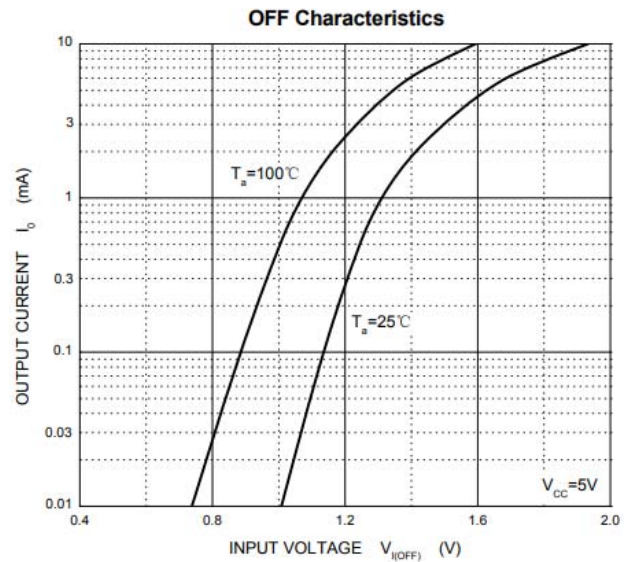
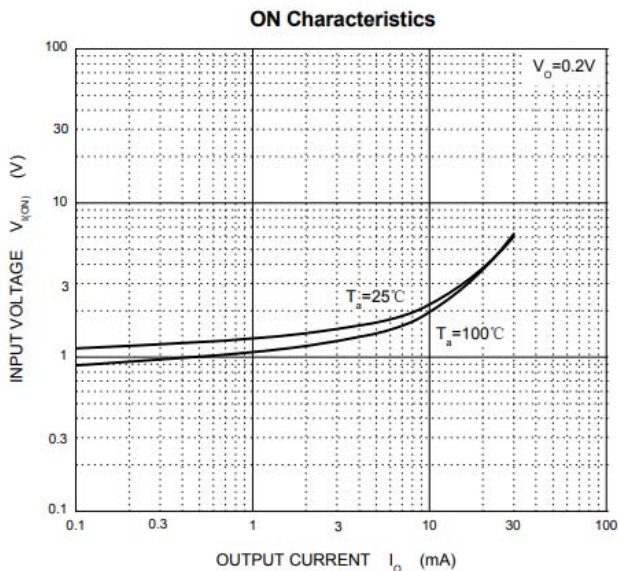
ITEM	SYMBOL	UNIT	CONDITIONS	MIN	TYP	MAX
Input voltage	$V_{I(off)}$	V	$V_{CC}=-5V, I_c=-100\mu A$	-0.5	-	-
	$V_{I(on)}$	V	$V_o=-0.2V, I_c=-5mA$	-	-	-3
Output voltage	$V_{O(on)}$	V	$I_o / I_i = -10mA / -0.5 mA$	-	-	-0.3
Input current	I_i	mA	$V_i=-5V$	-	-	-0.36
Output current	$I_{O(off)}$	μA	$V_{CC}=-50V, V_i=0$	-	-	-0.5
DC current gain	GI		$V_o=-5V, I_o = -5mA$	56	-	-
Input resistance	R_1	$k\Omega$		15.4	22	28.6
Resistance ratio	R_2/R_1			0.8	1	1.2
Transition frequency	fT	MHz	$V_{CE}=-10V, I_E=-5mA, f=100MHz$	-	250	-

Ordering Information (Example)

PREFERRED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
UMD2N	F2	Approximate 0.009g	3000	30000	120000	7" reel

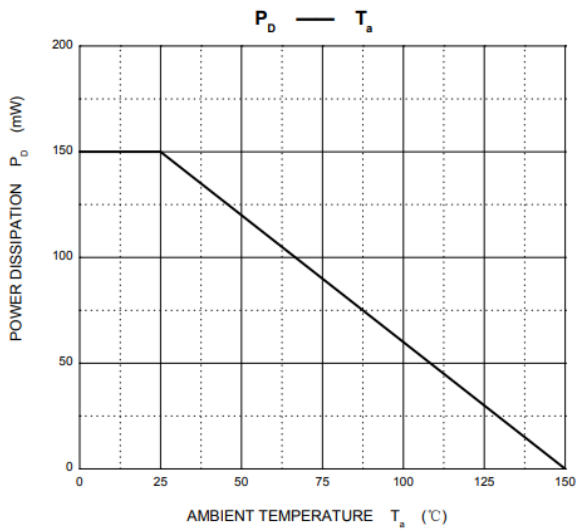
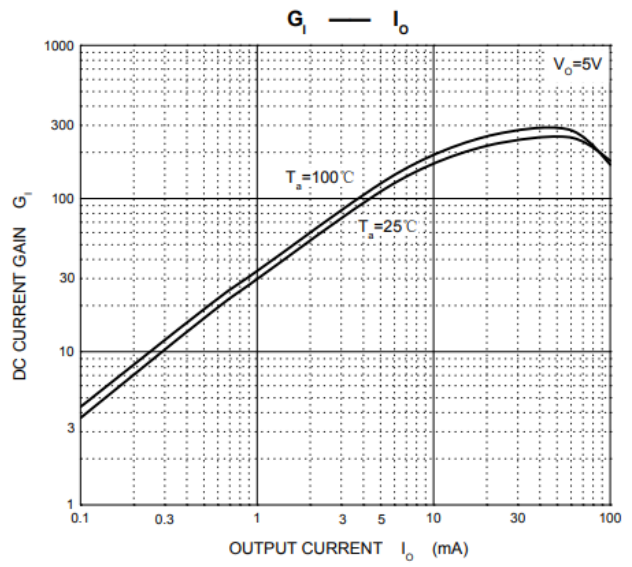
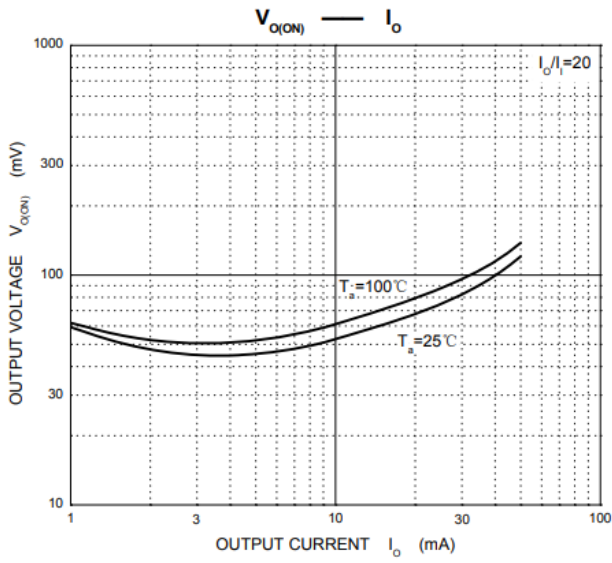
Characteristics (Typical)

DTR1-NPN:





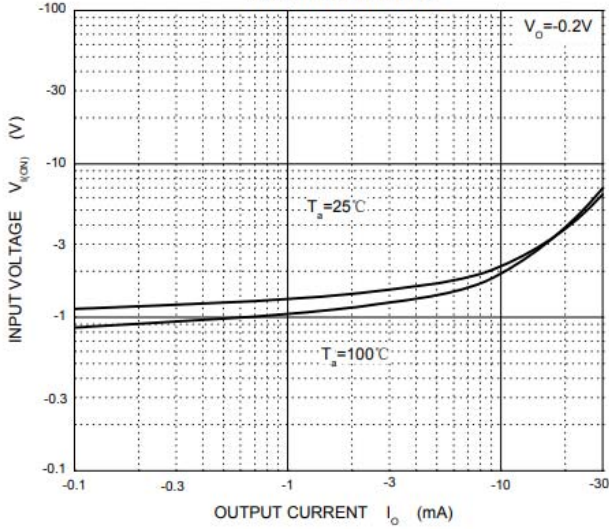
UMD2N



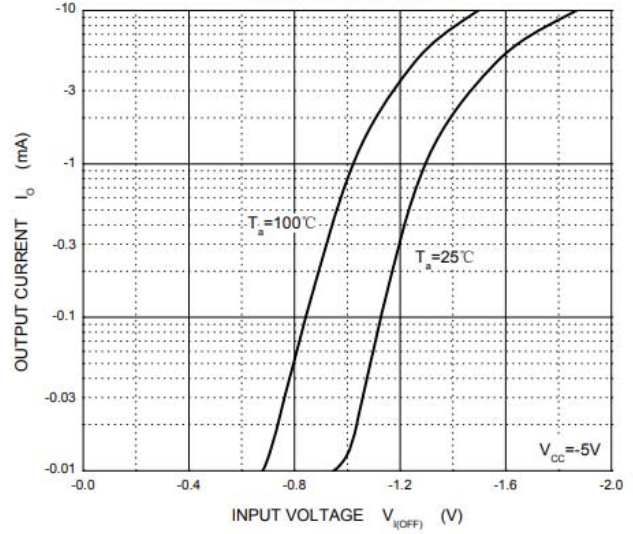


DTR2-PNP:

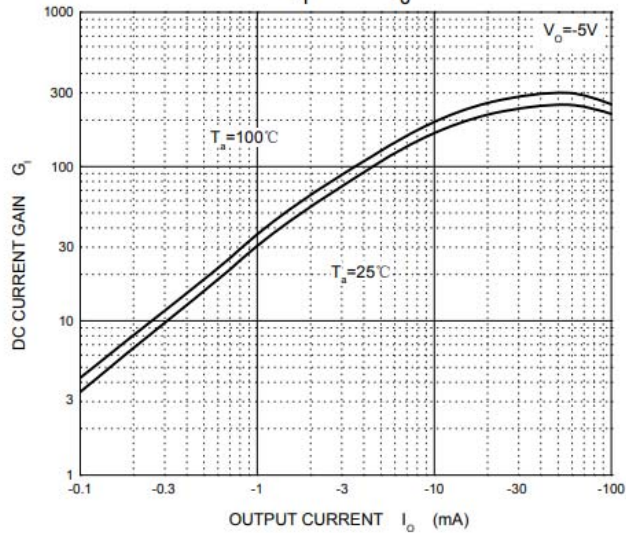
ON Characteristics



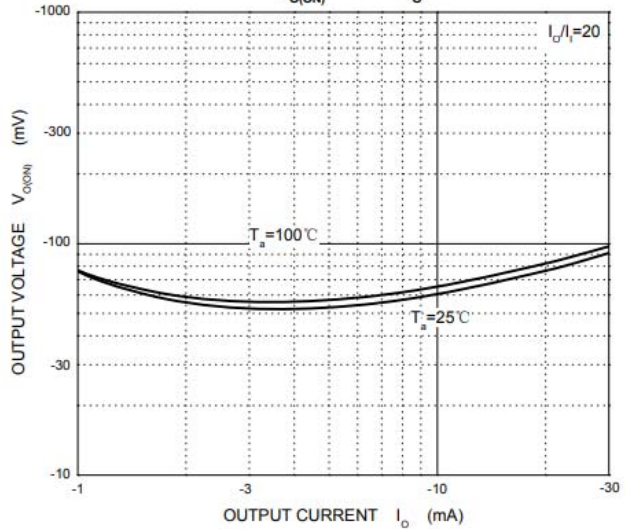
OFF Characteristics



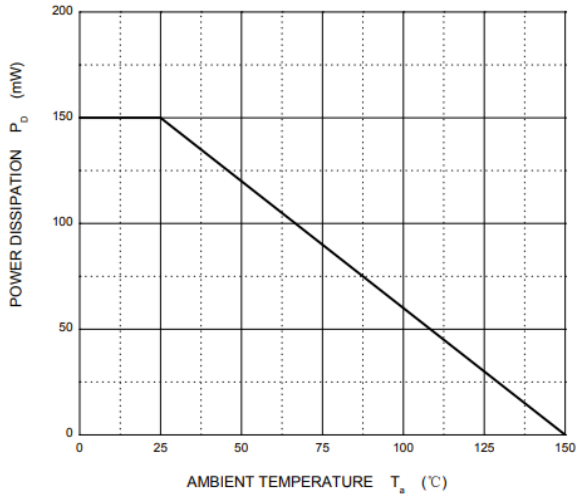
$G_i - I_o$



$V_{o(ON)} - I_o$



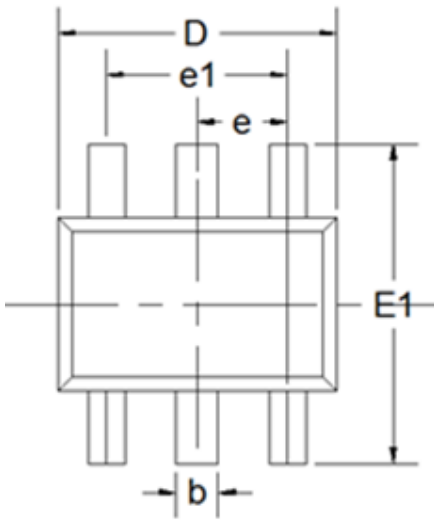
$P_D - T_a$



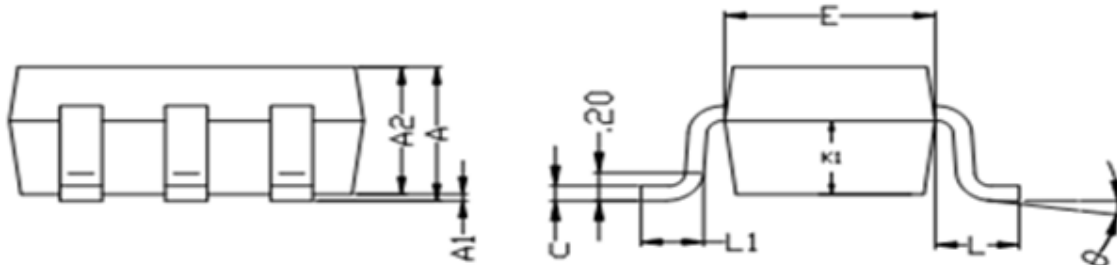


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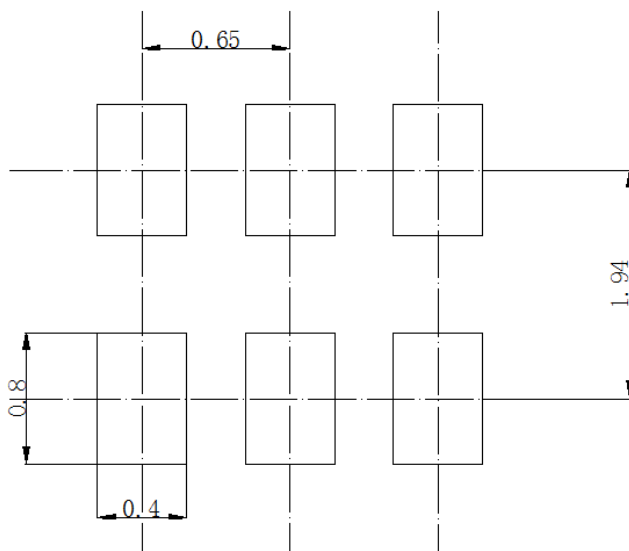
■SOT-363 Package Outline Dimensions



DIM	DIMENSIONS			
	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.035	0.043	0.9	1.1
A1	0	0.004	0	0.1
A2	0.035	0.039	0.9	1
b	0.006	0.014	0.15	0.35
c	0.002	0.01	0.05	0.25
D	0.071	0.087	1.8	2.2
E	0.045	0.053	1.15	1.35
E1	0.085	0.096	2.15	2.45
e	0.026Typ		0.65Typ	
e1	0.047	0.055	1.2	1.4
L	0.021Typ		0.525Typ	
L1	0.01	0.018	0.26	0.46
φ	0°	8°	0°	8°



■SOT-363 Suggested Pad Layout



Unit: mm



UMD2N

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[NSVMUN2112T1G](#) [NSVIMD10AMT1G](#) [NSVEMC2DXV5T1G](#) [NSVDTC144WET1G](#) [NSVDTC123JET1G](#) [NSVDTA143EM3T5G](#)
[NSVB1706DMW5T1G](#) [NSBC143EDP6T5G](#) [RN2101,LF\(CT](#) [NSBA144WDXV6T1G](#) [DTA115TET1G](#) [NSBC115TDP6T5G](#)