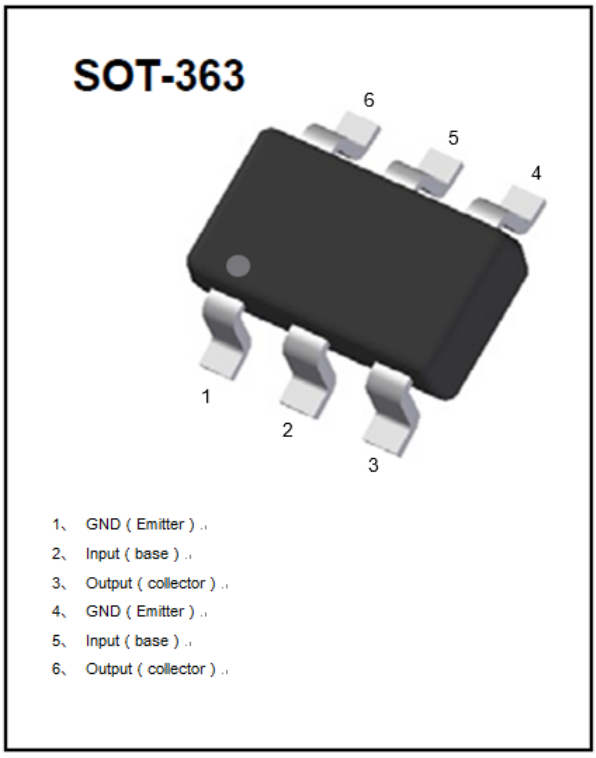
Digital Transistors (Built-in Resistors)



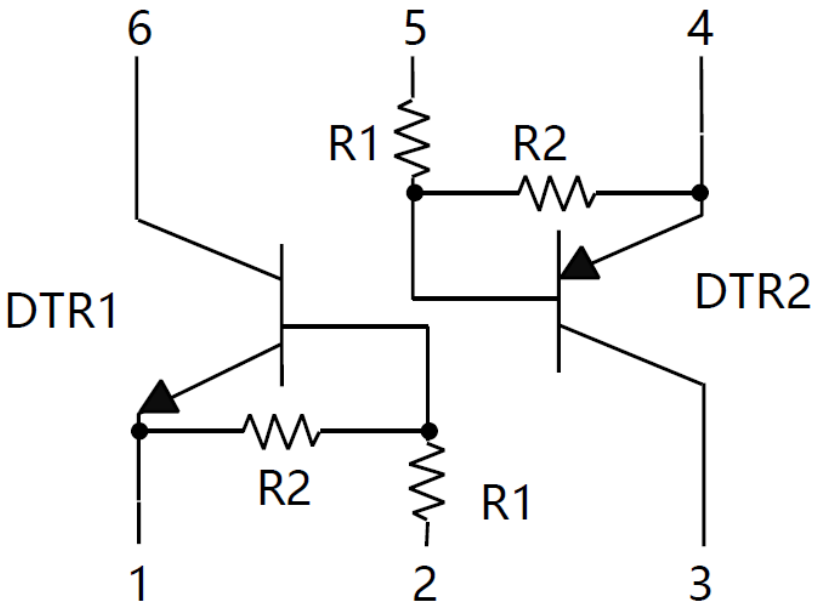
Features

- 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:** D12

■Equivalent circuit



■Maximum Ratings (Ta=25℃ 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）	Tj	℃		150
Storage Temperature	T_{STG}	℃		-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	Tj	℃		150
Storage Temperature	T_{STG}	℃		-55 to +150

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

DTR1-NPN

ITEM	SYMBOL	UNIT	CONDITIONS	MIN	TYP	MAX
Input voltage	$VI_{(off)}$	V	V_{CC}=5V,Ic=100uA	0.5	-	-
	$VI_{(on)}$	V	V_O=0.3V,Ic=2mA	-	-	3
Output voltage	$Vo_{(on)}$	V	Io /Ii =10mA/0.5 mA	-	-	0.3
Input current	I_I	mA	V_I=5V	-	-	0.18
Output current	$I_{O(off)}$	uA	V_{CC}=50V, Vi=0	-	-	0.5
DC current gain	G_I		Vo=5V, Io =5mA	68	-	-
Input resistance	R_1	kΩ		32.9	47	61.1
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	-

DTR2-PNP

ITEM	SYMBOL	UNIT	CONDITIONS	MIN	TYP	MAX
Input voltage	$VI_{(off)}$	V	V_{CC}=-5V,Ic=-100uA	-0.5	-	-
	$VI_{(on)}$	V	V_O=-0.3V,Ic=-2mA	-	-	-3
Output voltage	$Vo_{(on)}$	V	Io /Ii =-10mA/-0.5 mA	-	-	-0.3
Input current	I_I	mA	V_I=-5V	-	-	-0.18
Output current	$I_{O(off)}$	uA	V_{CC}=-50V, Vi=0	-	-	-0.5
DC current gain	G_I		Vo=-5V, Io =-5mA	68	-	-
Input resistance	R_1	kΩ		32.9	47	61.1
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	-

■ **Ordering Information** (Example)

PREFERED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
UMD12N	F2	Approximate 0.009g	3000	30000	120000	7” reel

■ **Characteristics** (Typical)

Fig. 1 - DTR1 DC Current Gain Characteristics

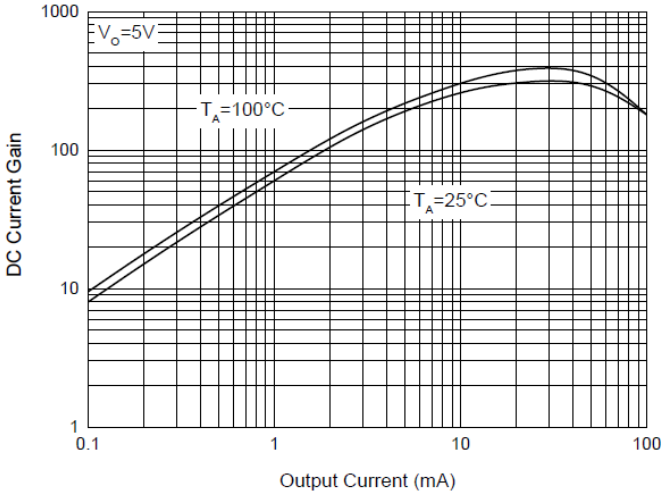


Fig. 2 - DTR1 Input Voltage (on) Characteristics

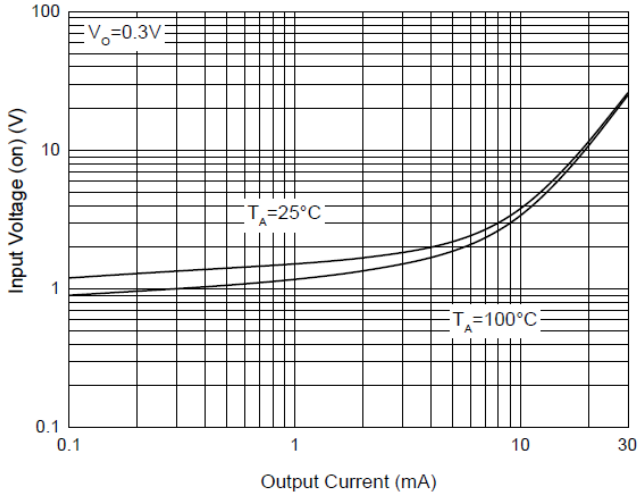


Fig. 3 - DTR1 Input Voltage (off) Characteristics

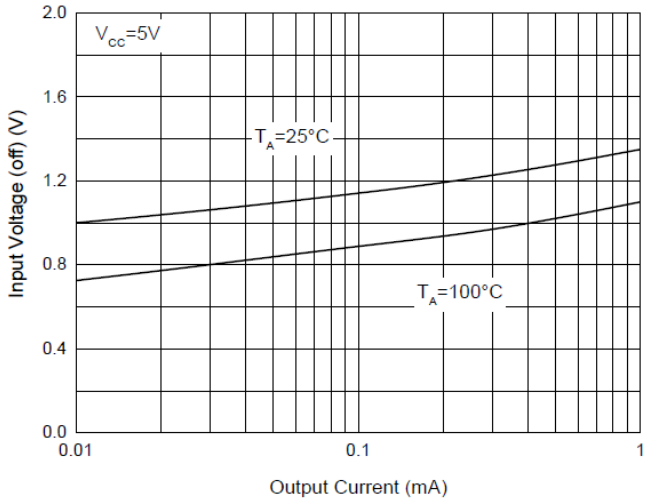


Fig. 4 - DTR1 Output Voltage Characteristics

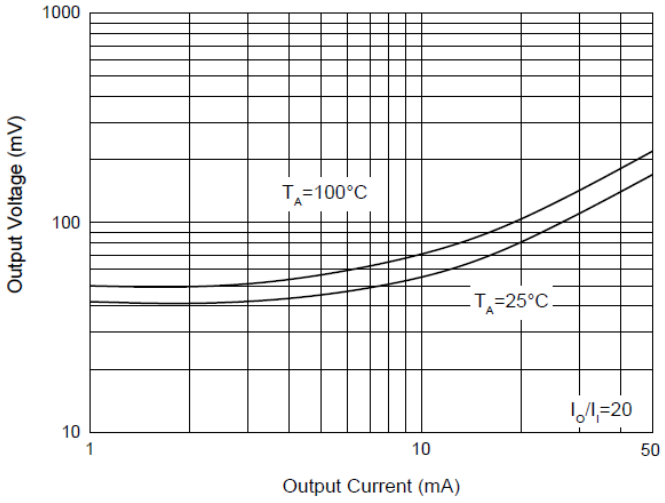


Fig. 5 - DTR2 DC Current Gain Characteristics

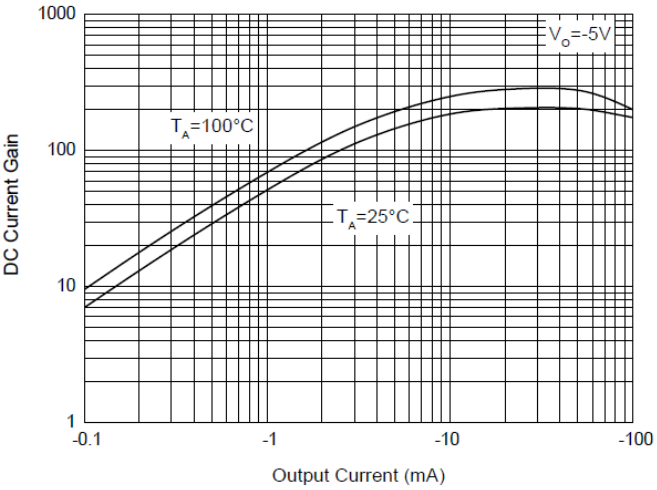


Fig. 6 - DTR2 Input Voltage (on) Characteristics

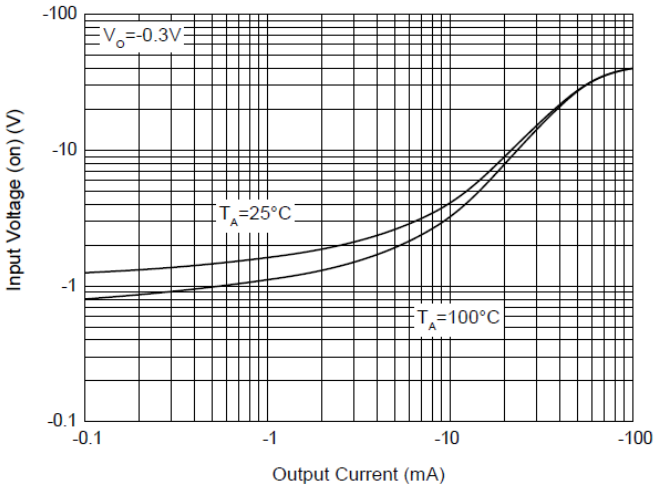


Fig. 7 - DTR2 Input Voltage (off) Characteristics

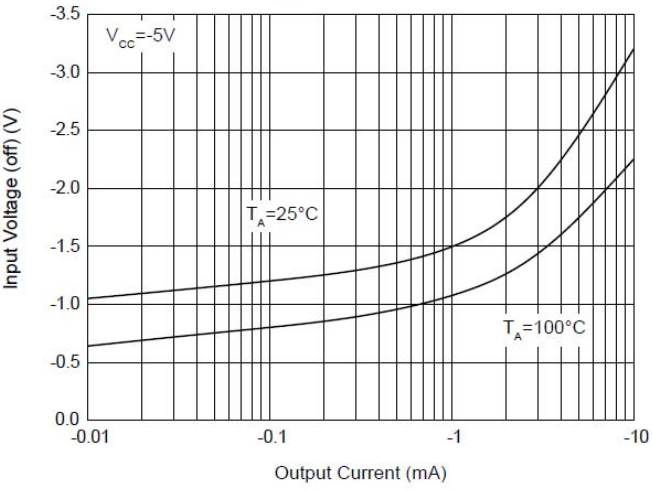
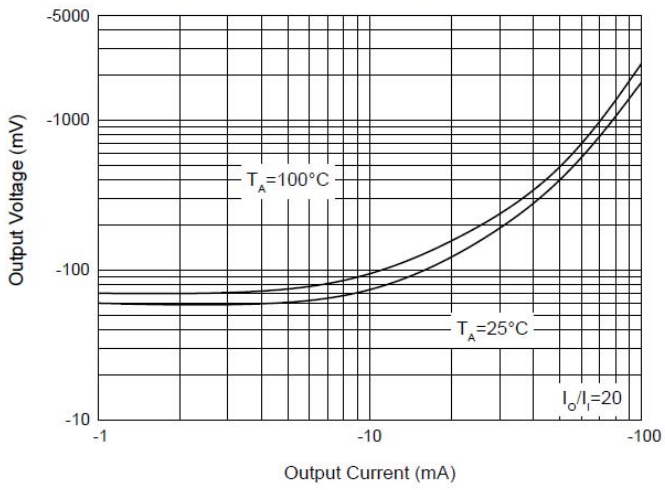
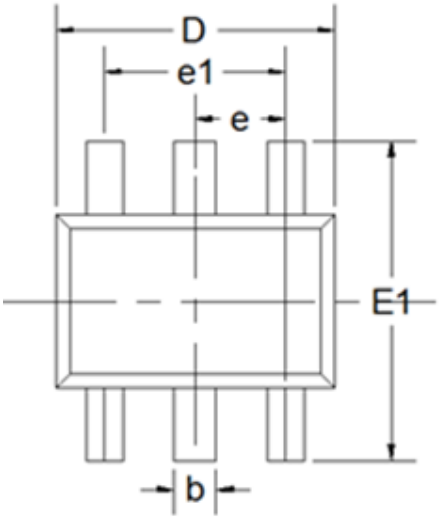


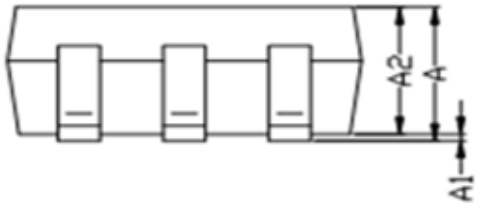
Fig. 8 - DTR2 Output Voltage Characteristics

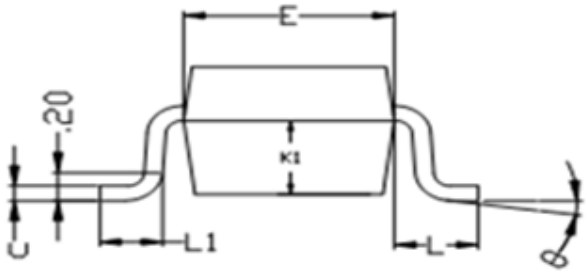


■SOT-363 Package Outline Dimensions

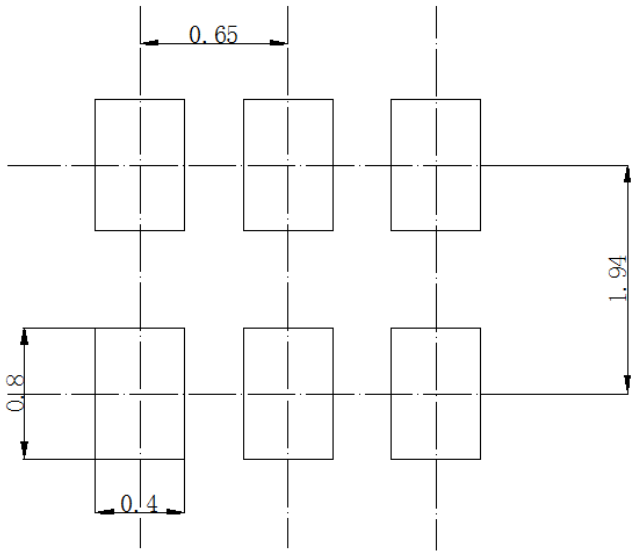


DIM	DIMENSIONS			
	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.035	0.043	0.9	1.1
A1	0	0.004	0	0.1
A2	0.035	0.039	0.9	1
b	0.006	0.014	0.15	0.35
c	0.002	0.01	0.05	0.25
D	0.071	0.087	1.8	2.2
E	0.045	0.053	1.15	1.35
E1	0.085	0.096	2.15	2.45
e	0.026Typ		0.65Typ	
e1	0.047	0.055	1.2	1.4
L	0.021Typ		0.525Typ	
L1	0.01	0.018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





■SOT-363 Suggested Pad Layout



Unit：mm

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