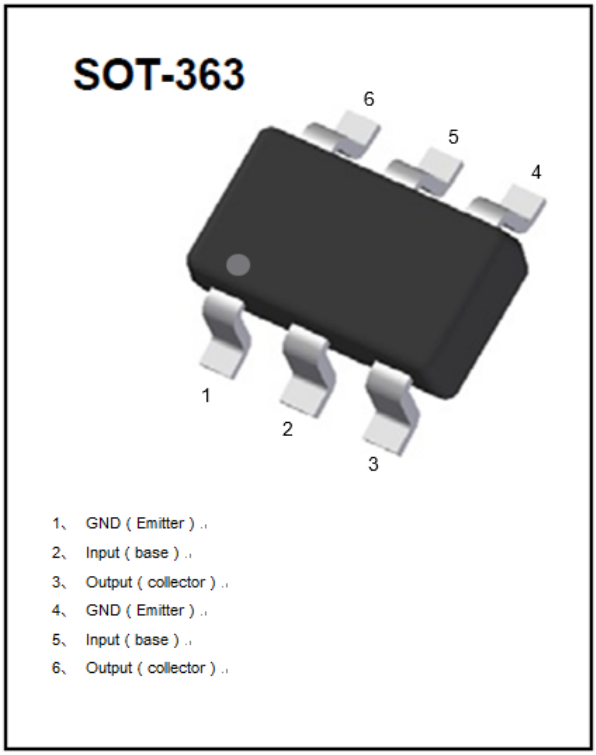
Digital Transistors (Built-in Resistors)



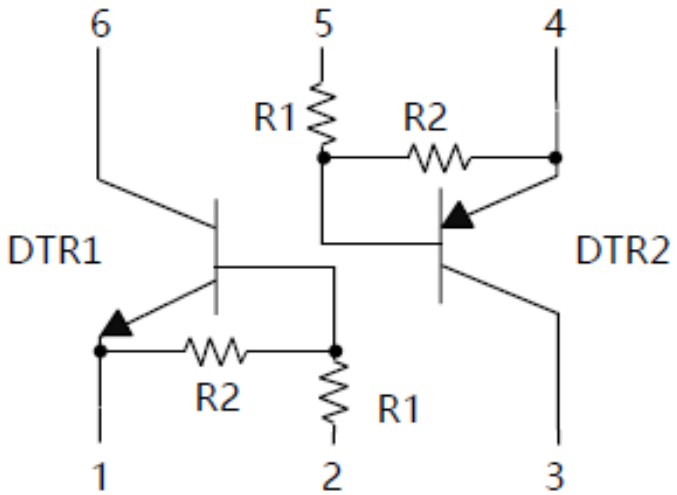
Features

- 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



■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=0.2V,Ic=5mA	-	-	3
Output voltage	$Vo_{(on)}$	V	Io /Ii =10mA/0.5 mA	-	-	0.3
Input current	I_I	mA	V_I=5V	-	-	0.36
Output current	$I_{O(off)}$	uA	V_{CC}=50V, Vi=0	-	-	0.5
DC current gain	G_I		Vo=5V, Io =5mA	56	-	-
Input resistance	R_1	kΩ		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	-

DTR2-PNP

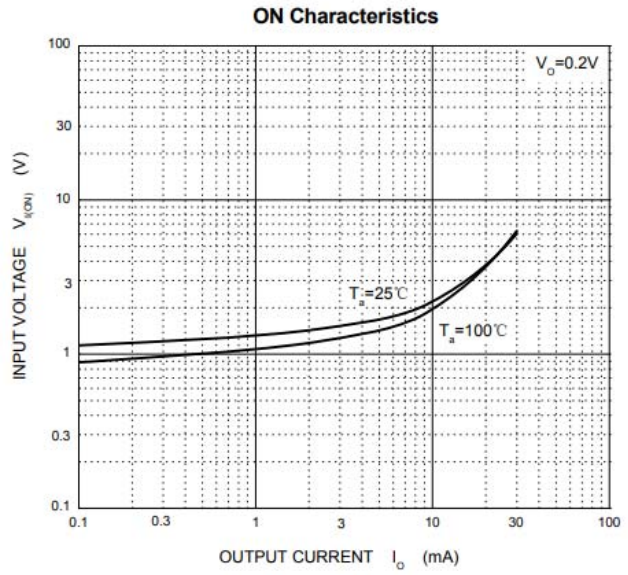
ITEM	SYMBOL	UNIT	CONDITIONS	MIN	TYP	MAX
Input voltage	$VI_{(off)}$	V	V_{CC}=-5V,Ic=-100uA	-0.5	-	-
	$VI_{(on)}$	V	V_O=-0.2V,Ic=-5mA	-	-	-3
Output voltage	$Vo_{(on)}$	V	Io /Ii =-10mA/-0.5 mA	-	-	-0.3
Input current	I_I	mA	V_I=-5V	-	-	-0.36
Output current	$I_{O(off)}$	uA	V_{CC}=-50V, Vi=0	-	-	-0.5
DC current gain	GI		Vo=-5V, Io =-5mA	56	-	-
Input resistance	R_1	kΩ		15.4	22	28.6
Resistance ratio	R_2/R_1			0.8	1	1.2
Transition frequency	fT	MHz	VCE=-10V,IE=-5mA,f=100MHz	-	250	-

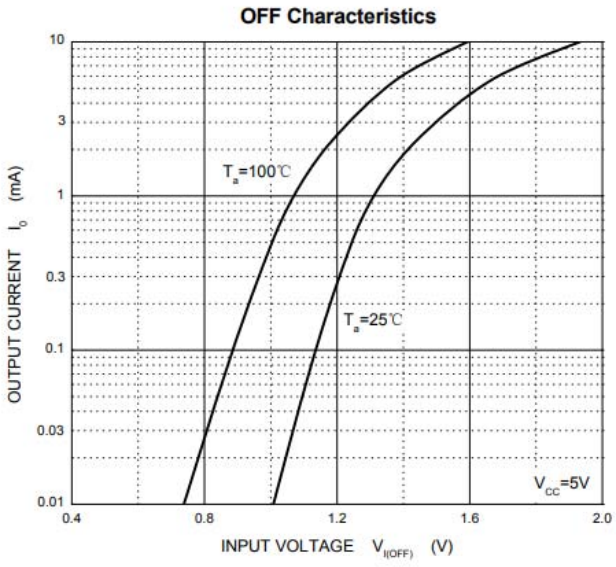
■ **Ordering Information** (Example)

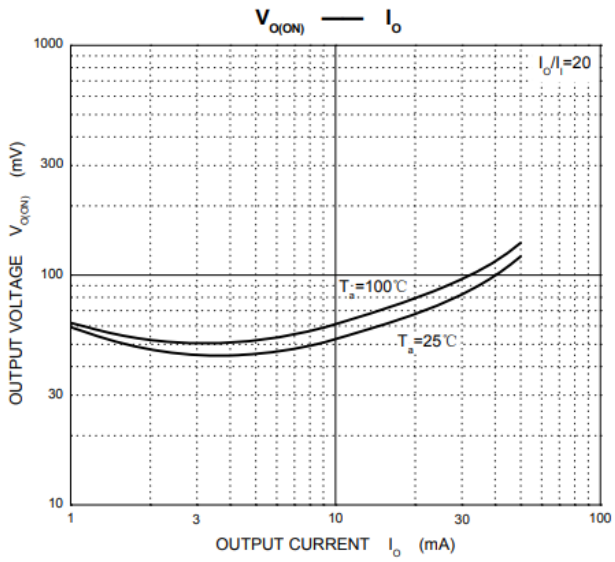
PREFERED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
UMD2N	F2	Approximate 0.009g	3000	30000	120000	7” reel

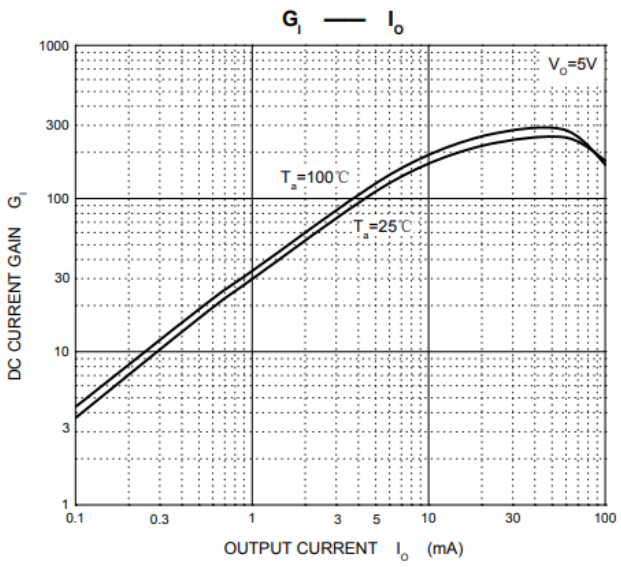
■ **Characteristics** (Typical)

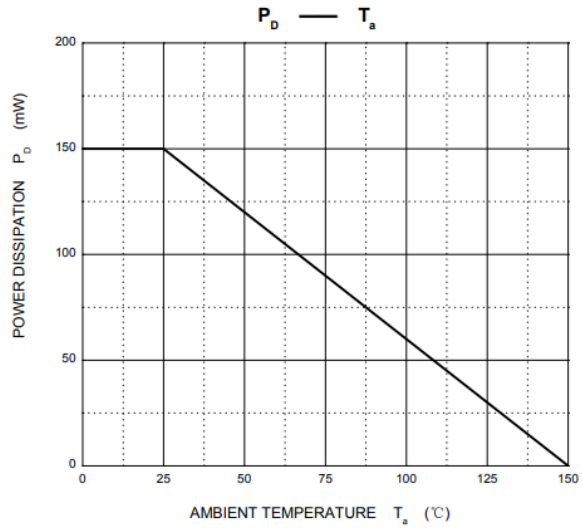
DTR1-NPN：



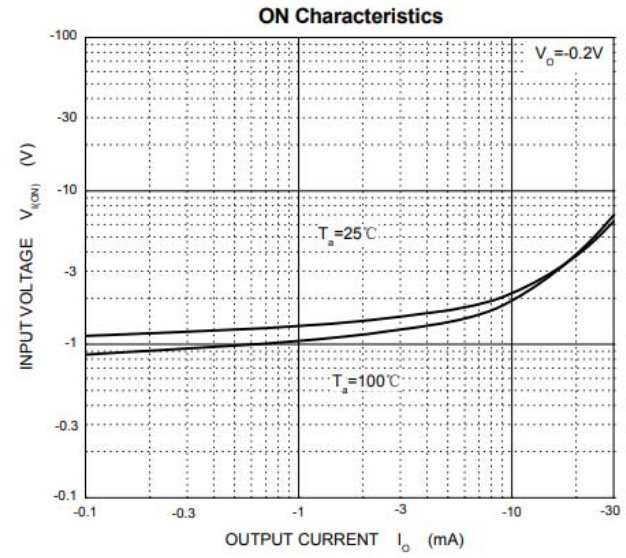


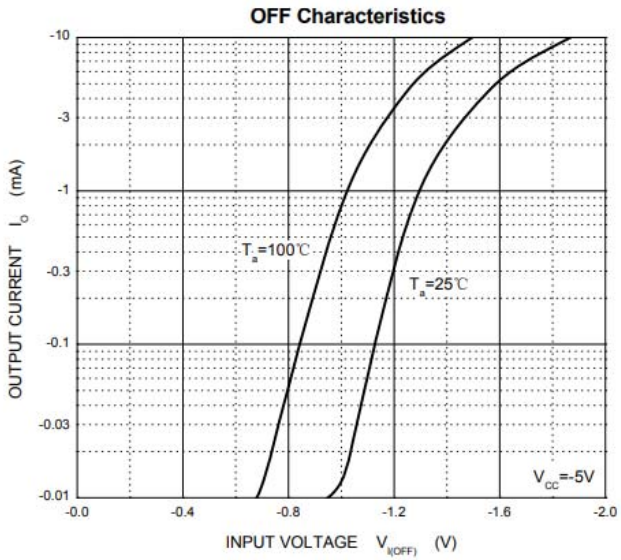

$V_{O(ON)}$ — I_O
I_O/I_I=20
OUTPUT VOLTAGE $V_{O(ON)}$ (mV)
1000
300
100
30
10
T_a=100℃
T_a=25℃
1
3
10
30
100
OUTPUT CURRENT I_O (mA)

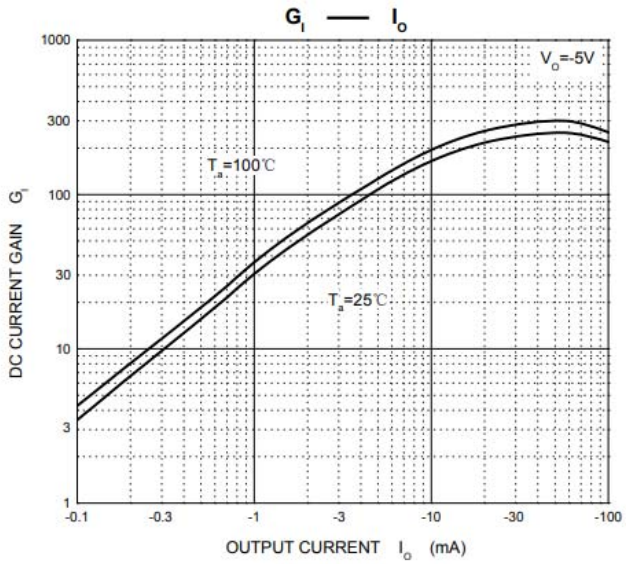

G_I — I_O
V_O=5V
DC CURRENT GAIN G_I
1000
300
100
30
10
3
1
T_a=100℃
T_a=25℃
0.1
0.3
1
3
5
10
30
100
OUTPUT CURRENT I_O (mA)

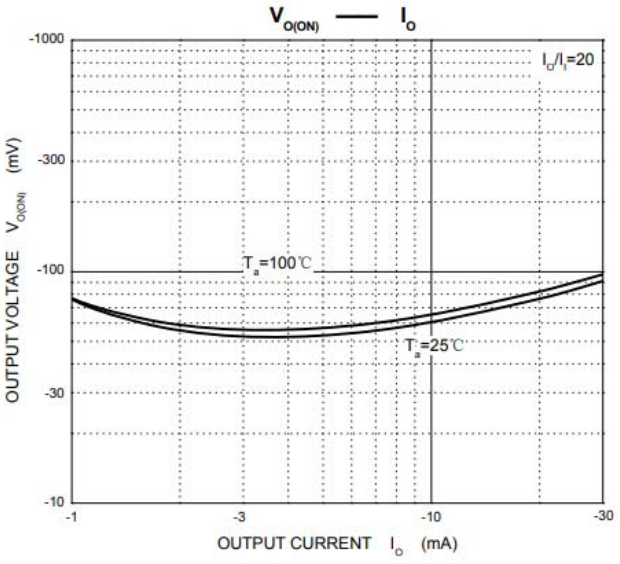

P_D — T_a
POWER DISSIPATION P_D (mW)
200
150
100
50
0
0
25
50
75
100
125
150
AMBIENT TEMPERATURE T_a (℃)

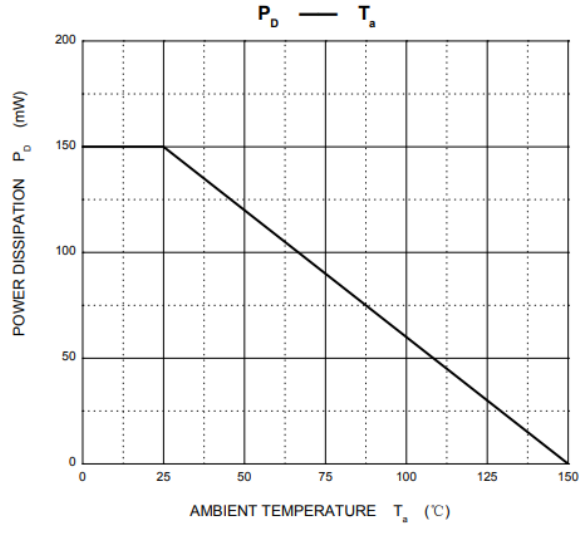
DTR2-PNP：


ON Characteristics
V_O=-0.2V
T_a=25℃
T_a=100℃
INPUT VOLTAGE $V_{I(ON)}$ (V)
OUTPUT CURRENT I_O (mA)
-100
-30
-10
-3
-1
-0.3
-0.1
-0.1
-0.3
-1
-3
-10
-30

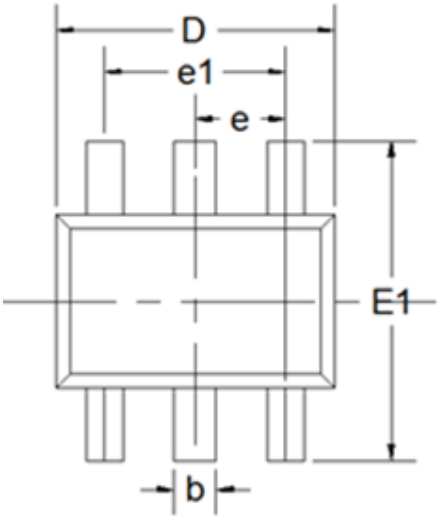

OFF Characteristics
T_a=100℃
T_a=25℃
V_{CC}=-5V
OUTPUT CURRENT I_O (mA)
INPUT VOLTAGE $V_{I(OFF)}$ (V)
-10
-3
-1
-0.3
-0.1
-0.03
-0.01
-0.0
-0.4
-0.8
-1.2
-1.6
-2.0


G_I — I_O
V_O=-5V
T_a=100℃
T_a=25℃
DC CURRENT GAIN G_I
OUTPUT CURRENT I_O (mA)
1000
300
100
30
10
3
1
-0.1
-0.3
-1
-3
-10
-30
-100

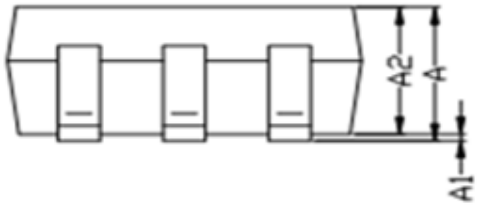

$V_{O(ON)}$ — I_O
I_O/I_I=20
T_a=100℃
T_a=25℃
OUTPUT VOLTAGE $V_{O(ON)}$ (mV)
OUTPUT CURRENT I_O (mA)
-1000
-300
-100
-30
-10
-1
-3
-10
-30

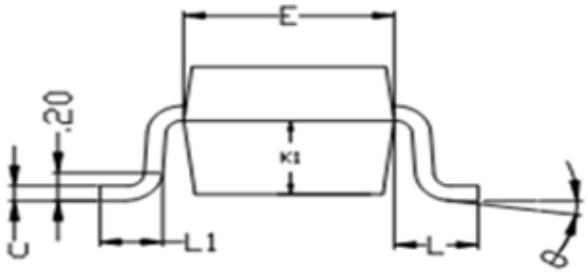

P_D — T_a
POWER DISSIPATION P_D (mW)
AMBIENT TEMPERATURE T_a (℃)
200
150
100
50
0
0
25
50
75
100
125
150

■SOT-363 Package Outline Dimensions

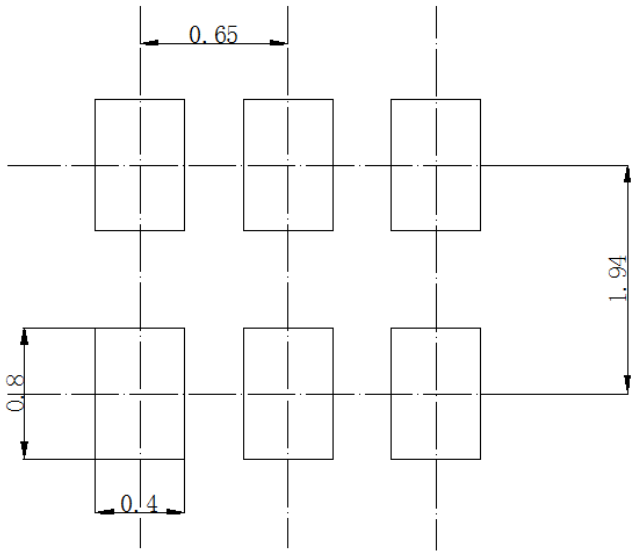


DIMENSIONS				
DIM	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.035	0.043	0.9	1.1
A1	0	0.004	0	0.1
A2	0.035	0.039	0.9	1
b	0.006	0.014	0.15	0.35
c	0.002	0.01	0.05	0.25
D	0.071	0.087	1.8	2.2
E	0.045	0.053	1.15	1.35
E1	0.085	0.096	2.15	2.45
e	0.026Typ		0.65Typ	
e1	0.047	0.055	1.2	1.4
L	0.021Typ		0.525Typ	
L1	0.01	0.018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





■SOT-363 Suggested Pad Layout



Unit：mm

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