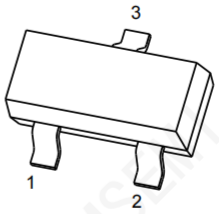
Description

The PDTC143ZT,215-JSM consists of NPN digital transistors with built-in bias resistors, enabling the configuration of an inverter circuit without the need for external input resistors. The bias resistors are thin-film resistors with complete isolation, allowing for negative biasing of the input and almost completely eliminating parasitic effects. This series simplifies device design as only the on/off conditions need to be set for operation.

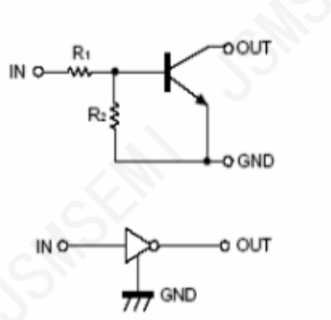


1.IN
2.GND3
.OUT

SOT-23

Features

- Built-in bias resistors for inverter circuit configuration without external input resistors
- Thin-film bias resistors with complete isolation for negative input biasing and minimal parasitic effects
- Simple device design with only on/off conditions requiring setting
- Wide supply voltage range up to 50V
- High input voltage range from -5V to +30V
- Low output voltage (on) of typically 0.1V
- High DC current gain with a minimum of 80
- Low input current and output leakage current
- High transition frequency of 250MHz



Circuit Diagram

Applications

- General-purpose inverter circuits
- Digital logic applications
- Signal processing circuits
- Low-power electronic devices
- Consumer electronics
- Industrial control systems

Ordering Information

Ordernumber	Package	Operation Temperature Range	MSL Grade	Ship, Quantity	Green
PDTC143ZT,215-JSM	SOT-23	-55～+150	3	T&R,3000	Rohs

Absolute Maximum Ratings(TA=25℃nless otherwise specified)

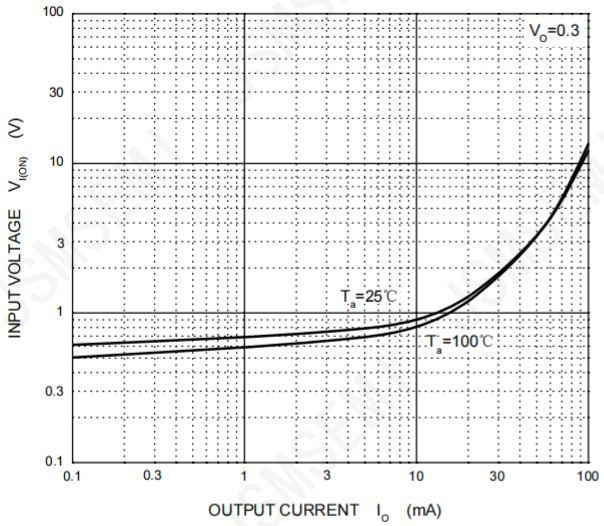
Symbol	Parameter	Limits	Unit
V_{CC}	Supply Voltage	50	V
V_{IN}	Input Voltage	-5～+30	V
I_O	Output Current	100	mA
T_J,T_{stg}	Operation Junction and Storage Temperature Range	-55～+150	℃

Electrical Characteristics(TA=25℃unless otherwise specified)

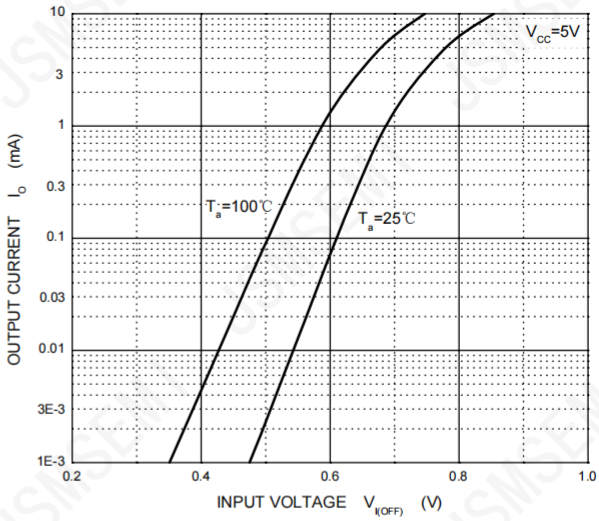
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input voltage	$V_{I(off)}$	V_{CC}=5V,I_O=100μA	0.5			V
	$V_{I(on)}$	V_O=0.3V ,I_O=5mA			1.3	V
Output voltage	$V_{O(on)}$	I_O/I_I=5mA/0.25mA		0.1	0.3	V
Input current	I_I	V_I=5V			1.8	mA
Output current	$I_{O(off)}$	V_{CC}=50V,V_I=0			0.5	μA
DC current gain	G_I	V_O=5V,I_O=10mA	80			
Input resistance	R_1		3.29	4.7	6.11	kΩ
Resistance ratio	R_2/R_1		8	10	12	
Transition frequency	f_T	V_O=10V ,I_O=5mA,f=100MHz		250		MHz

Typical Performance Curves

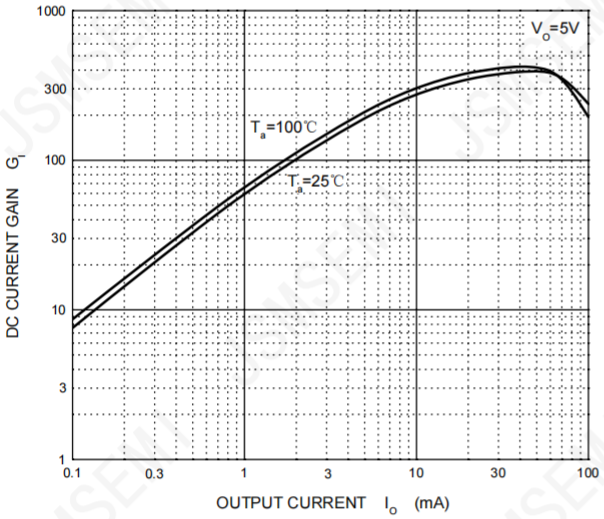
ON Characteristics



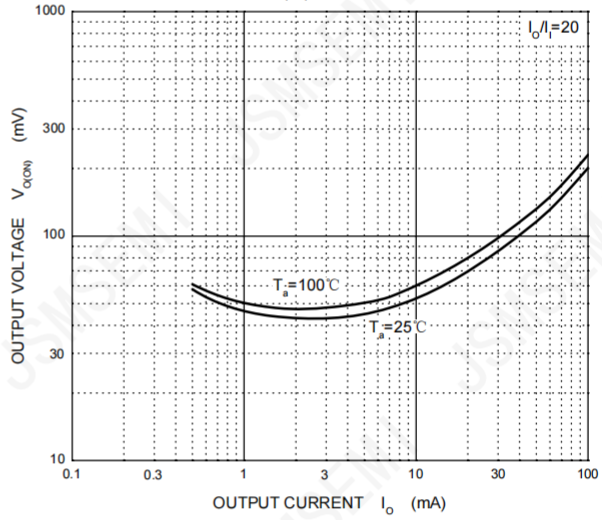
OFF Characteristics



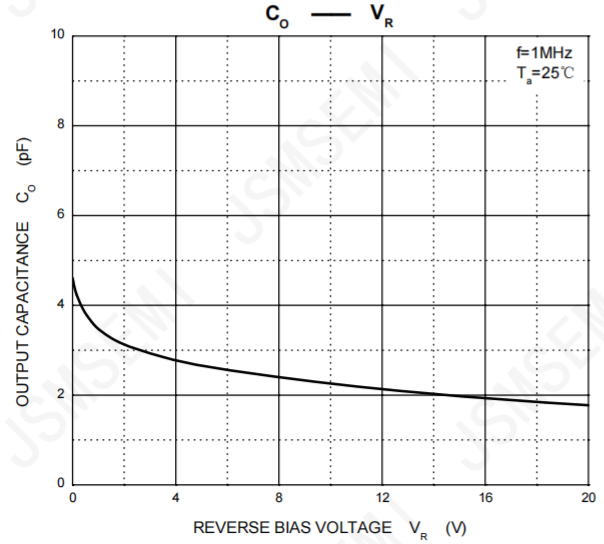
G_I — I_O



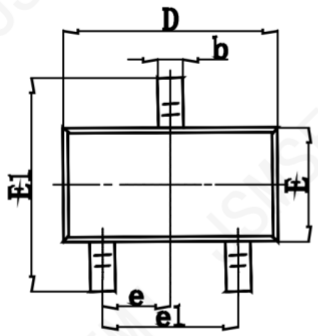
$V_{O(ON)}$ — I_O

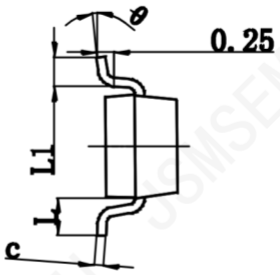


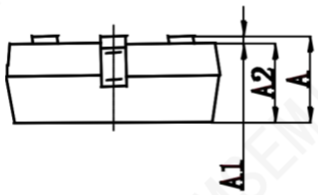
C_O — V_R



SOT-23 Package Qutline Dimensions

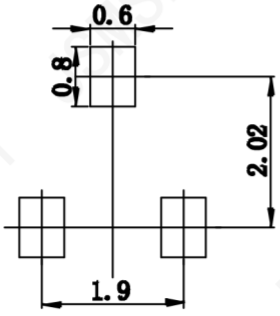






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

Revision History

Rev.	Change	Date
V1.0	Initial version	6/27/2021

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