

# MSKSEMI

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

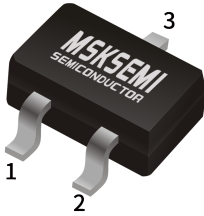
Product data sheet

[www.msksemi.com](http://www.msksemi.com)

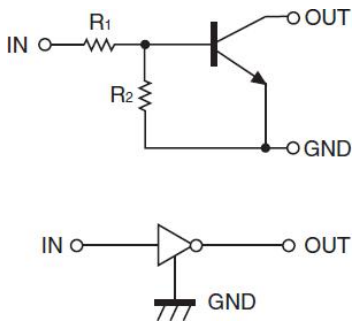
DIGITAL TRANSISTOR (NPN)

**FEATURES**

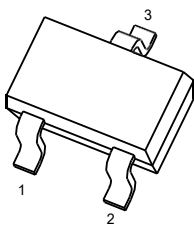
- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors(see equivalent circuit)
- The bias resistors consist of thin-film resistors with complete isolation to allow negative biasing of the input.They also have the advantage of almost completely eliminating parasitic effects
- Only the on/off conditions need to be set for operation, making device design easy



• **Equivalent Circuit**

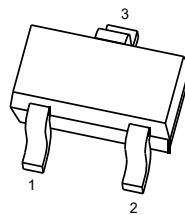


• **PIN**



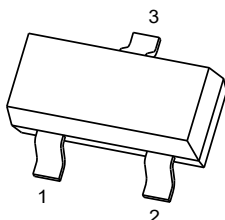
**DTC143EUA-MS**  
**SOT-323**

- 1. IN
- 2. GND
- 3. OUT



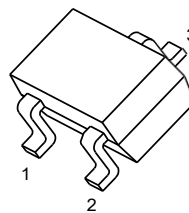
**DTC143EE-MS**  
**SOT-523**

- 1. IN
- 2. GND
- 3. OUT



**DTC143ECA-MS**  
**SOT-23**

- 1. IN
- 2. GND
- 3. OUT



**DTC143EKA-MS**  
**SOT-23-3L**

- 1. IN
- 2. GND
- 3. OUT

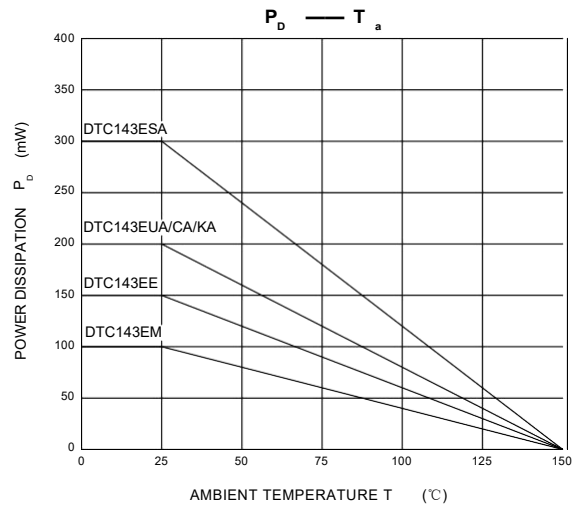
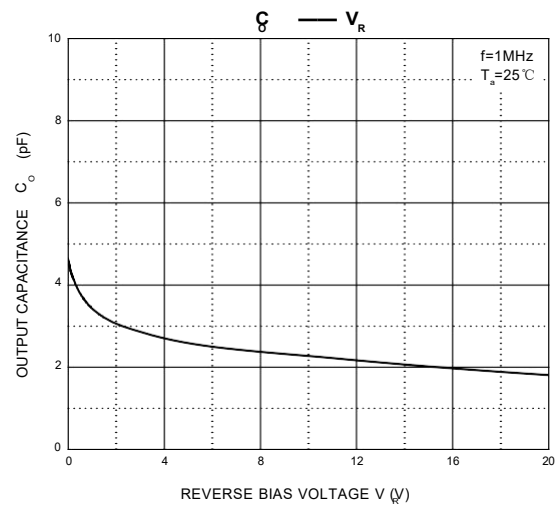
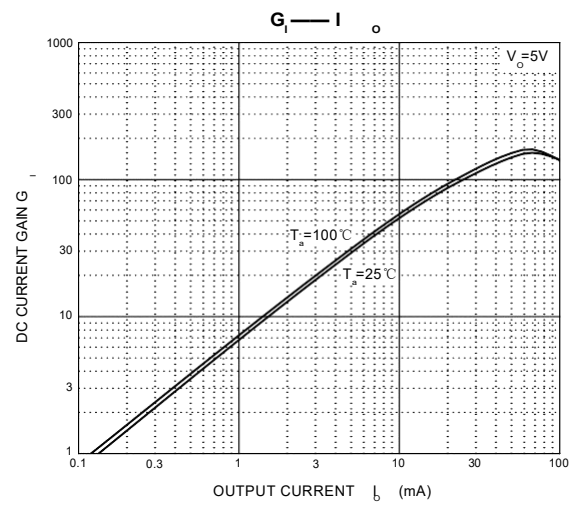
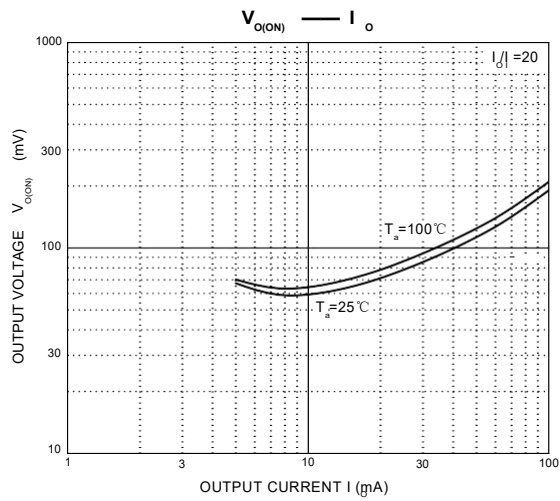
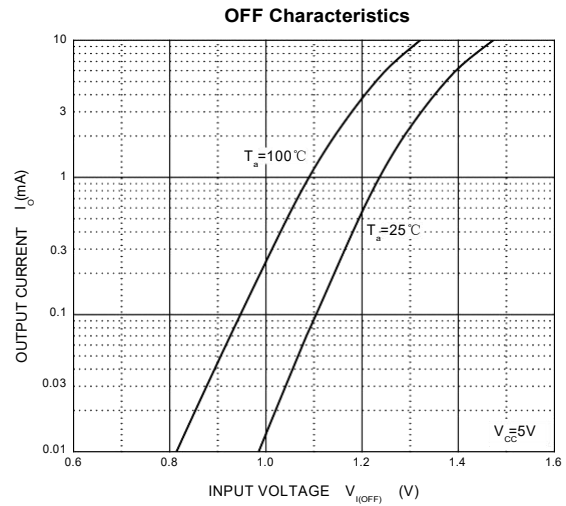
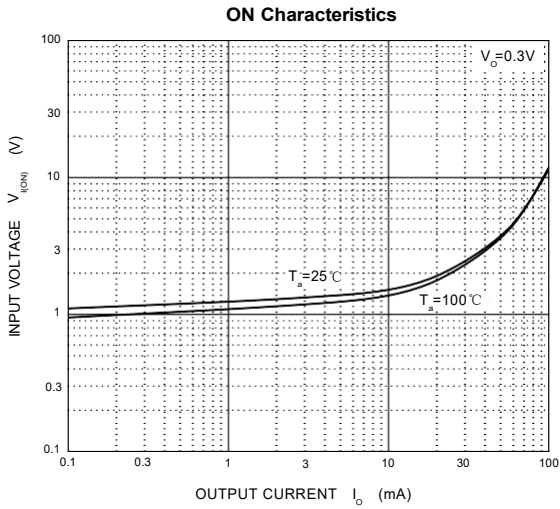
**MAXIMUM RATINGS(Ta=25°C unless otherwise noted)**

Symbol	Parameter	DTC143					Unit
			EE-MS	EUA-MS	ECA-MS	EKA-MS	
V <sub>CC</sub>	Supply Voltage	50					V
V <sub>IN</sub>	Input Voltage	-10~+30					V
I <sub>o</sub>	Output Current	100					mA
P <sub>D</sub>	Power Dissipation		150	200	200	200	mW
T <sub>j</sub>	Junction Temperature	150					°C
T <sub>stg</sub>	Storage Temperature	-55~+150					°C

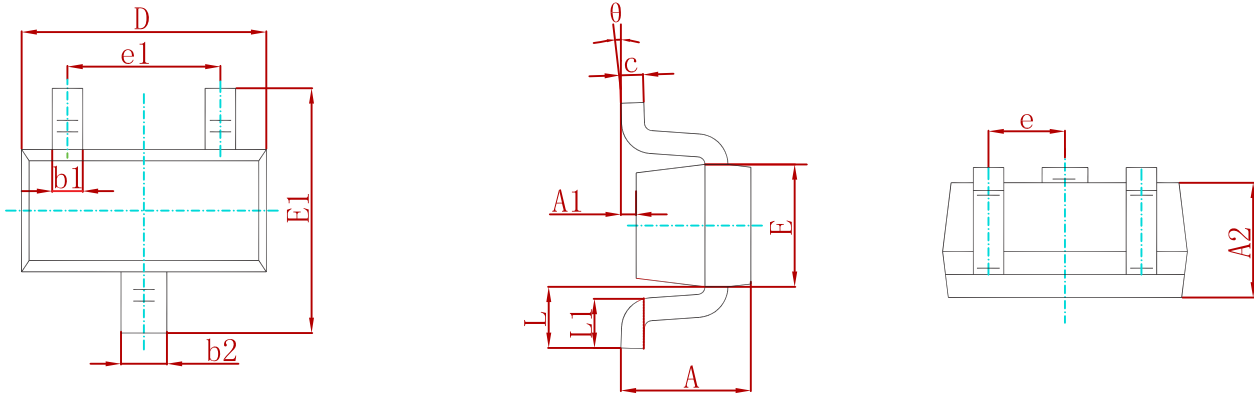
**ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)**

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input voltage	V <sub>I(off)</sub>	V <sub>CC</sub> =5V, I <sub>o</sub> =100μA	0.5			V
	V <sub>I(on)</sub>	V <sub>O</sub> =0.3V, I <sub>o</sub> =20mA			3	V
Output voltage	V <sub>O(on)</sub>	I <sub>o</sub> /I <sub>i</sub> =10mA/0.5mA			0.3	V
Input current	I <sub>i</sub>	V <sub>i</sub> =5V			1.8	mA
Output current	I <sub>O(off)</sub>	V <sub>CC</sub> =50V, V <sub>i</sub> =0			0.5	μA
DC current gain	G <sub>i</sub>	V <sub>O</sub> =5V, I <sub>o</sub> =10mA	20			
Input resistance	R <sub>1</sub>		3.29	4.7	6.11	kΩ
Resistance ratio	R <sub>2</sub> /R <sub>1</sub>		0.8	1	1.2	
Transition frequency	f <sub>T</sub>	V <sub>O</sub> =10V, I <sub>o</sub> =5mA, f=100MHz		250		MHz

# Typical Characteristics

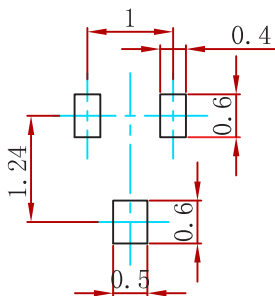


**PACKAGE MECHANICAL DATA**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

**Suggested Pad Layout**

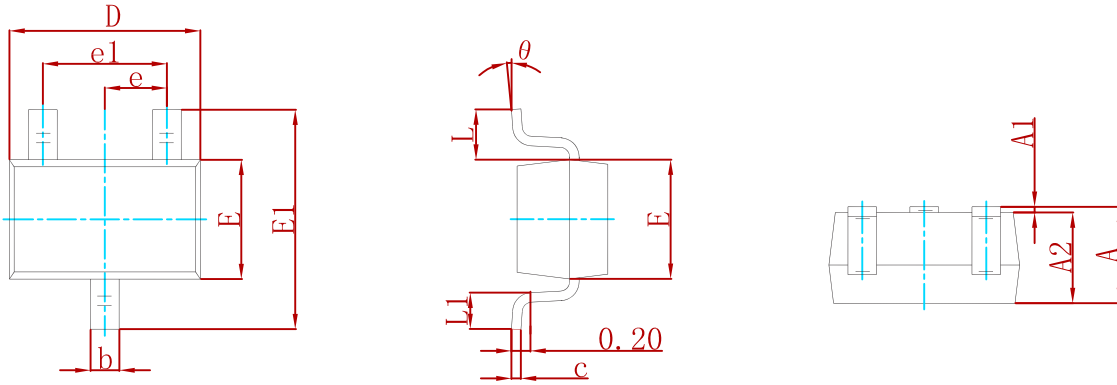


- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance: ±0.05mm.
  3. The pad layout is for reference purposes only.

**REEL SPECIFICATION**

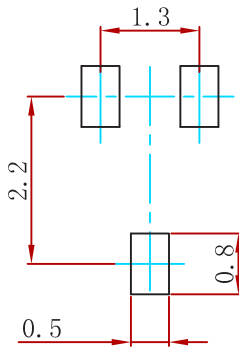
P/N	PKG	QTY
DTC143EE-MS	SOT-523	3000

**PACKAGE MECHANICAL DATA**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

**Suggested Pad Layout**

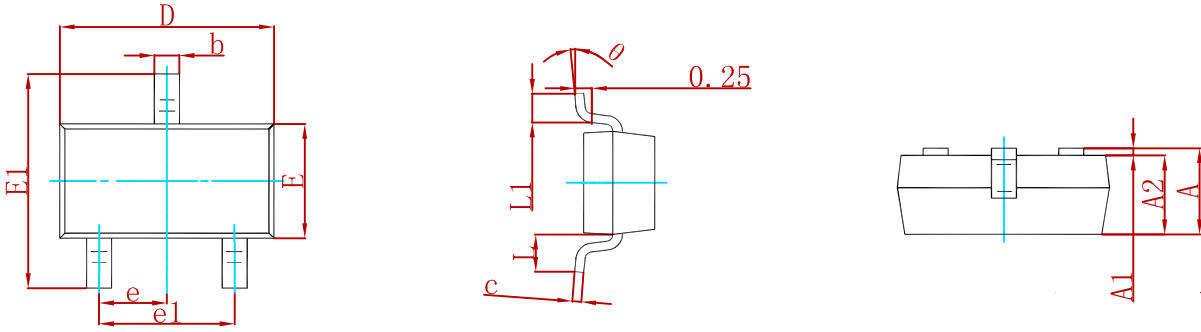


Note:  
 1. Controlling dimension: in millimeters.  
 2. General tolerance: ±0.05mm.  
 3. The pad layout is for reference purposes only.

**REEL SPECIFICATION**

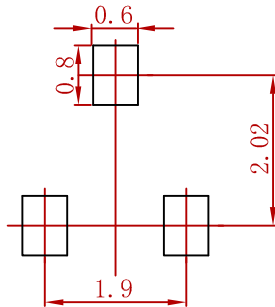
P/N	PKG	QTY
DTC143EUA-MS	SOT-323	3000

**PACKAGE MECHANICAL DATA**



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°

**Suggested Pad Layout**

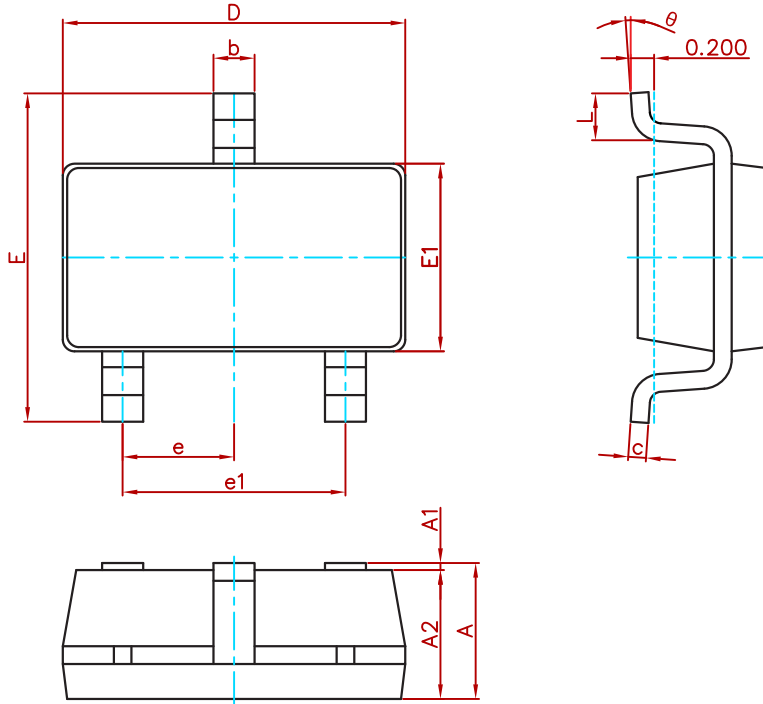


- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance: ± 0.05mm.
  3. The pad layout is for reference purposes only.

**REEL SPECIFICATION**

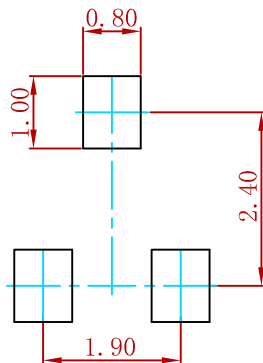
P/N	PKG	QTY
DTC143ECA-MS	SOT-23	3000

**PACKAGE MECHANICAL DATA**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

**Suggested Pad Layout**



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

**REEL SPECIFICATION**

P/N	PKG	QTY
DTC143EKA-MS	SOT-23-3L	3000



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