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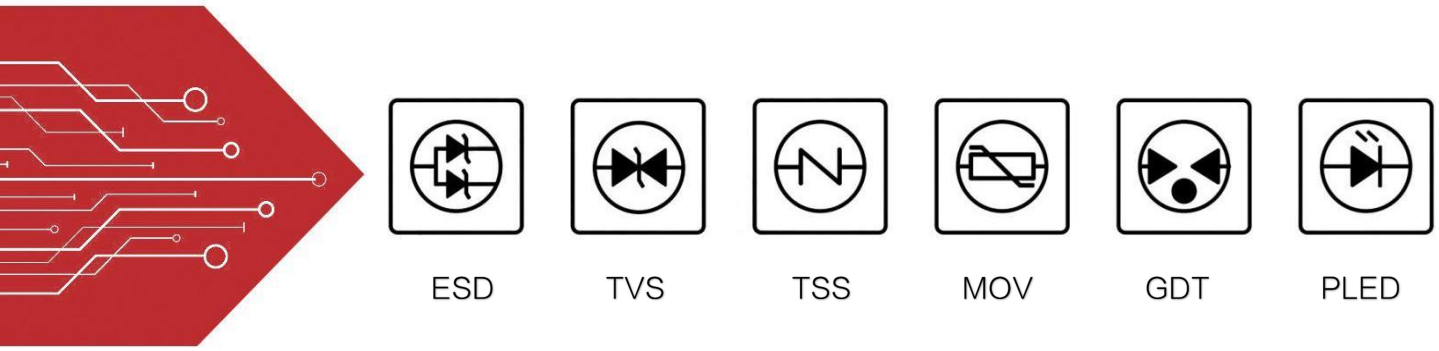
SEMICONDUCTOR



Product data sheet

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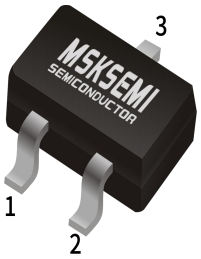
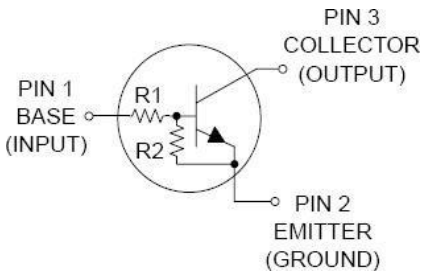


SOT-523

Features:

- Simplifies Circuit Design
- Reduces Board Space
- Reduces Component Count
- RoHS Compliant
- Green EMC
- Matte Tin(Sn) Lead Finish
- Weight: approx. 0.002g

Electrical Symbol:



Absolute Maximum Ratings (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	50	V
V_{CEO}	Collector-Emitter Voltage	50	V
I_C	Collector Current	100	mA
P_D	Power Dissipation	150	mW
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	600	°C /W
T_J T_{STG}	Junction & Storage Temperature Range	-55 to +150	°C

These ratings are limiting values above which the serviceability of the device may be impaired.

Device Marking & Resistor Values:

P/N	Mark	R1 (KΩ)	R2 (KΩ)
DTC114EE-MS	24	10	10
DTC124EE-MS	25	22	22
DTC144EE-MS	26	47	47
DTC114YE-MS	64	10	47
DTC114TE-MS	04	10	∞
DTC143TE-MS	03	4.7	∞
DTC123EE-MS	22	2.2	2.2
DTC143EE-MS	23	4.7	4.7
DTC143ZE-MS	E23	4.7	47
DTC124XE-MS	45	22	47
DTC123JE-MS	E42	2.2	47

Electrical Characteristics (T_A = 25°C unless otherwise noted)

Off Characteristics

Symbol	Parameter	Test Condition	Limits			Unit
			Min	Typ	Max	
I_{CBO}	Collector-Base Cutoff Current	V_{CB} =50V, I_E =0A	-	-	100	nA
I_{CEO}	Collector-Emitter Cutoff Current	V_{CE} =50V, I_B =0A	-	-	500	nA
I_{EBO}	Emitter-Base Cutoff Current	V_{EB} =6.0V, I_C =0A				mA
	DTC114EE-MS		-	-	0.50	
	DTC124EE-MS		-	-	0.20	
	DTC144EE-MS		-	-	0.10	
	DTC114YE-MS		-	-	0.20	
	DTC114TE-MS		-	-	0.90	
	DTC143TE-MS		-	-	1.90	
	DTC123EE-MS		-	-	2.30	
	DTC143EE-MS		-	-	1.50	
	DTC143ZE-MS		-	-	0.18	
	DTC124XE-MS		-	-	0.13	
	DTC123JE-MS		-	-	0.20	
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C =10uA, I_E =0A	50	-	-	Volts
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage (Note 1)	I_C =2.0mA, I_B =0A	50	-	-	Volts

Note 1: Pulse Test. Pulse width <300us, Duty cycle < 2.0%)

On Characteristics (Note 1)

Symbol	Parameter	Test Condition	Limits			Unit
			Min	Typ	Max	
H_{FE}	DC Current Dain	V_{CE} =10V, I_C =5.0mA				
	DTC114EE-MS		35	60	--	
	DTC124EE-MS		60	100	--	
	DTC144EE-MS		80	140	--	
	DTC114YE-MS		80	140	--	
	DTC114TE-MS		160	350	--	
	DTC143TE-MS		160	350	--	
	DTC123EE-MS		8.0	15	--	
	DTC143EE-MS		15	30	--	
	DTC143ZE-MS		80	200	--	
	DTC124XE-MS		80	150	--	
	DTC123JE-MS		80	140	--	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage					
	DTC114EE-MS	I_C=10mA, I_B=0.3mA				
	DTC124EE-MS	I_C=10mA, I_B=0.3mA				
	DTC144EE-MS	I_C=10mA, I_B=0.3mA				
	DTC114YE-MS	I_C=10mA, I_B=0.3mA				
	DTC114TE-MS	I_C=10mA, I_B=1mA	--	--	0.25	Volts
	DTC143TE-MS	I_C=10mA, I_B=1mA				
	DTC123EE-MS	I_C=10mA, I_B=5mA				
	DTC143EE-MS	I_C=10mA, I_B=1mA				
	DTC143ZE-MS	I_C=10mA, I_B=1mA				
	DTC124XE-MS	I_C=10mA, I_B=1mA				
	DTC123JE-MS	I_C=10mA, I_B=0.3mA				
V_{OL}	Output Voltage (on)	R_L= 1.0KΩ				
	DTC114EE-MS	V_{CC}=5.0V, V_B=2.5V				
	DTC124EE-MS	V_{CC}=5.0V, V_B=2.5V				
	DTC144EE-MS	V_{CC}=5.0V, V_B=3.5V				
	DTC114YE-MS	V_{CC}=5.0V, V_B=2.5V				
	DTC114TE-MS	V_{CC}=5.0V, V_B=2.5V	--	--	0.20	Volts
	DTC143TE-MS	V_{CC}=5.0V, V_B=2.5V				
	DTC123EE--MS	V_{CC}=5.0V, V_B=2.5V				
	DTC143EE--MS	V_{CC}=5.0V, V_B=2.5V				
	DTC143ZE--MS	V_{CC}=5.0V, V_B=2.5V				
	DTC124XE--MS	V_{CC}=5.0V, V_B=2.5V				
	DTC123JE--MS	V_{CC}=5.0V, V_B=2.5V				

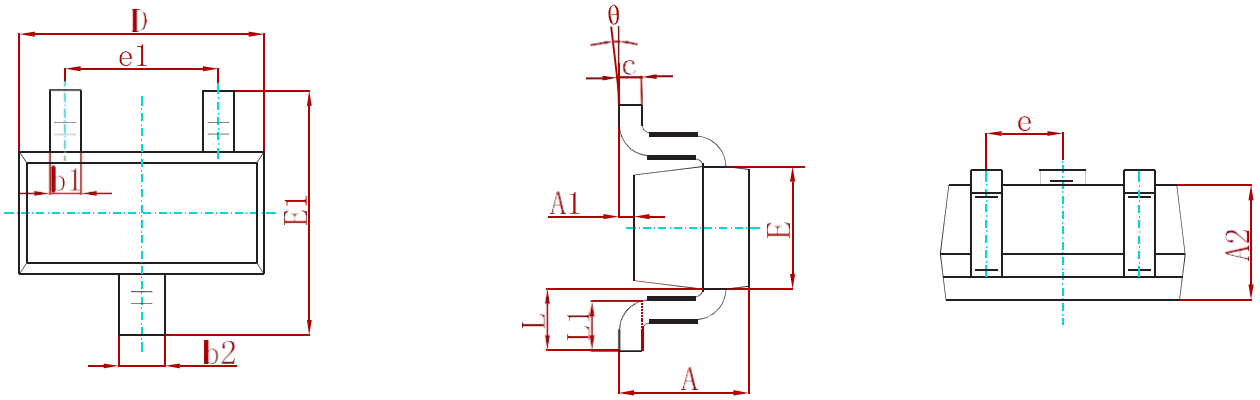
On Characteristics

Symbol	Parameter	Test Condition	Limits			Unit
			Min	Typ	Max	
V_{OH}	Output Voltage (on)	R_L= 1.0KΩ				
	DTC114EE-MS	V_{CC}=5.0V, V_B=0.5V				
	DTC124EE-MS	V_{CC}=5.0V, V_B=0.5V				
	DTC144EE-MS	V_{CC}=5.0V, V_B=0.5V				
	DTC114YE-MS	V_{CC}=5.0V, V_B=0.5V				
	DTC114TE-MS	V_{CC}=5.0V, V_B=0.25V	4.9	--	--	Volts
	DTC143TE-MS	V_{CC}=5.0V, V_B=0.25V				
	DTC123EE-MS	V_{CC}=5.0V, V_B=0.5V				
	DTC143EE-MS	V_{CC}=5.0V, V_B=0.5V				
	DTC143ZE-MS	V_{CC}=5.0V, V_B=0.25V				
	DTC124XE-MS	V_{CC}=5.0V, V_B=0.5V				
	DTC123JE-MS	V_{CC}=5.0V, V_B=0.5V				

Electrical Characteristics (T_A = 25°C unless otherwise noted)

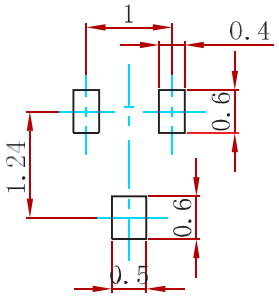
Symbol	Characteristic		Min	Typ	Max	Unit
R1	Input Resistor	DTC114EE--MS	7.0	10	13	
		DTC124EE-MS	15.4	22	28.6	
		DTC144EE-MS	32.9	47	61.1	
		DTC114YE-MS	7.0	10	13	
		DTC114TE-MS	7.0	10	13	
		DTC143TE-MS	3.3	4.7	6.1	KΩ
		DTC123EE-MS	1.5	2.2	2.9	
		DTC143EE-MS	3.3	4.7	6.1	
		DTC143ZE-MS	3.3	4.7	6.1	
		DTC124XE-MS	15.4	22	28.6	
		DTC123JE-MS	1.54	2.2	2.86	
R1/R2	Resistor Ratio	DTC114EE-MS	0.8	1.0	1.2	
		DTC124EE-MS	0.8	1.0	1.2	
		DTC144EE-MS	0.8	1.0	1.2	
		DTC114YE-MS	0.17	0.21	0.25	
		DTC114TE-MS	-	-	-	
		DTC143TE-MS	-	-	-	--
		DTC123EE-MS	0.8	1.0	1.2	
		DTC143EE-MS	0.8	1.0	1.2	
		DTC143ZE-MS	0.055	0.1	0.185	
		DTC124XE-MS	0.38	0.47	0.56	
		DTC123JE-MS	0.038	0.047	0.056	

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
0	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
DTCXXXXX-MS	SOT-523	3000

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