

Digital Transistors

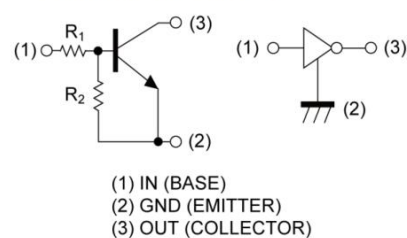
Digital Transistor (NPN)

DTC114EM/DTC114EE/DTC114EUA

DTC114ECA/DTC114EKA

Parameter	Value
V_{CC}	50V
$I_{C(MAX)}$	100mA
R1	10k Ω
R2	10k Ω

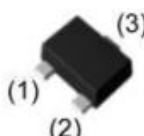
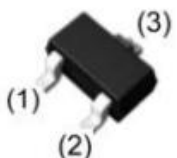
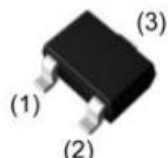
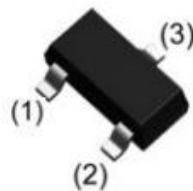
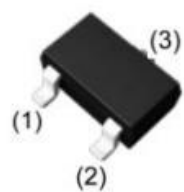
• Equivalent Circuit



Features

- Simplifies Circuit Design, Reduces Board Space
- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors(see equivalent circuit)
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

Outline

DTC114EM  SOT-723	DTC114EE  SOT-523
DTC114EUA  SOT-323	DTC114ECA  SOT-23
DTC114EKA  SOT-23-3	

Packaging specifications

Part No.	Package	Marking	Basic ordering unit.(pcs)
DTC114EM	SOT-723	24	8000 / Tape & Reel
DTC114EE	SOT-523	24	3000 / Tape & Reel
DTC114EUA	SOT-323	24	3000 / Tape & Reel
DTC114ECA	SOT-23	24	3000 / Tape & Reel
DTC114EKA	SOT-23-3	24	3000 / Tape & Reel

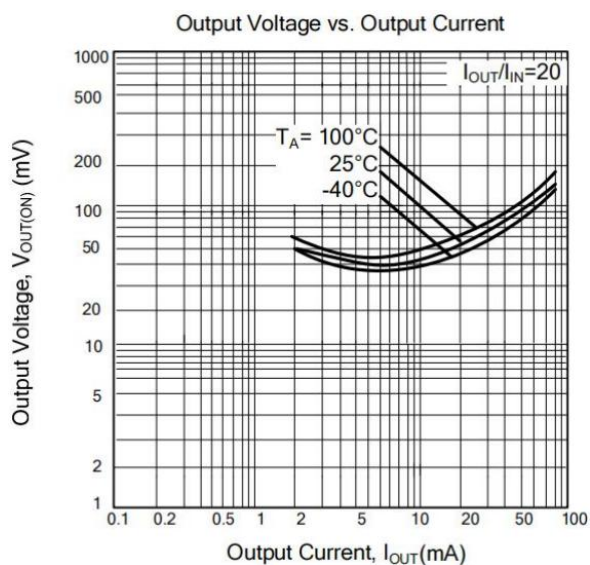
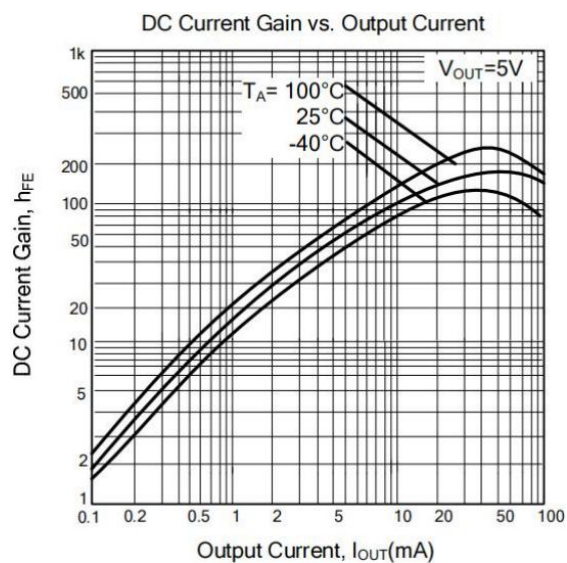
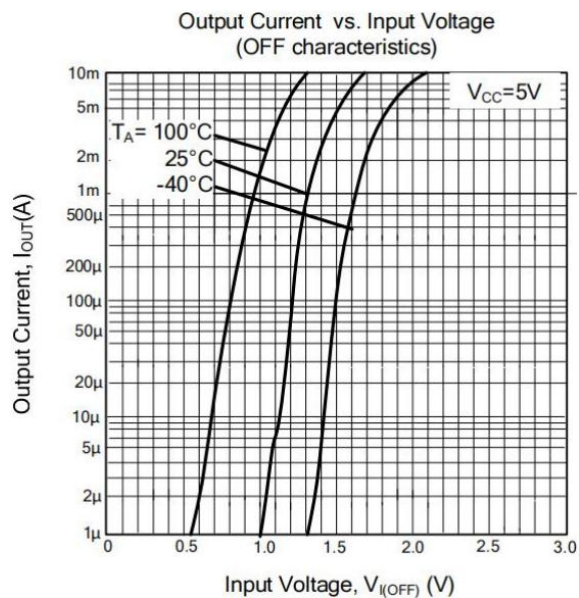
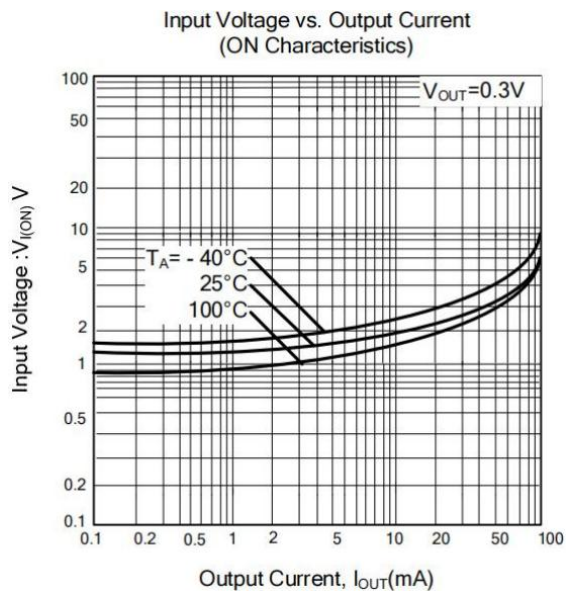
Absolute Maximum Ratings($T_A = 25^\circ\text{C}$)

Parameter		Symbol	Values	Unit
Supply Voltage		V_{CC}	50	V
Input Voltage		V_{IN}	-10~+40	V
Output Current		I_O	50	mA
Collector Current		I_{CM}	100	mA
Power dissipation	DTC114EM	P_D	100	mW
	DTC114EE		150	
	DTC114EUA		200	
	DTC114ECA		200	
	DTC114EKA		200	
Junction Temperature		T_J	150	$^\circ\text{C}$
Range of Storage Temperature		T_{STG}	-55~+150	$^\circ\text{C}$

Electrical characteristics ($T_A = 25^\circ\text{C}$)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Input Voltage	$V_{I(off)}$	$V_{CC} = 5V, I_O = 100\mu A$			0.5	V
	$V_{I(on)}$	$V_O = 0.3V, I_O = 10mA$	3.0			V
Output Voltage	$V_{O(on)}$	$I_O/I_I = 10mA / 0.5mA$		100	300	mV
Input Current	I_I	$V_I = 5V$			880	μA
Output Current	$I_{O(off)}$	$V_{CC} = 50V, V_I = 0V$			500	nA
DC Current Gain	G_I	$V_O = 5V, I_O = 5mA$	30			
Input Resistance	R1		7	10	13	$k\Omega$
Resistance Ratio	R2/R1		0.8	1.0	1.2	
Transition Frequency	f_T	$V_{CE} = 10V, I_E = -5mA, f = 100MHz$		250		MHz

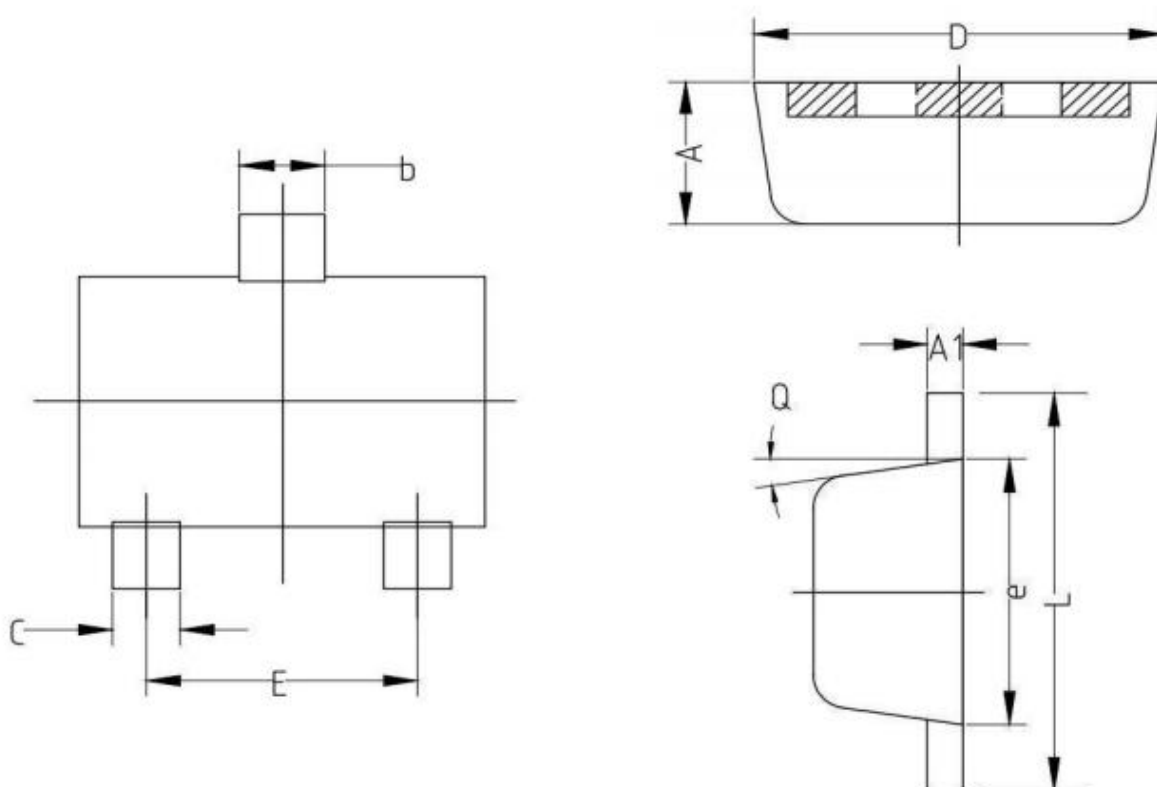
Typical Characteristics



Package Information

SOT-723

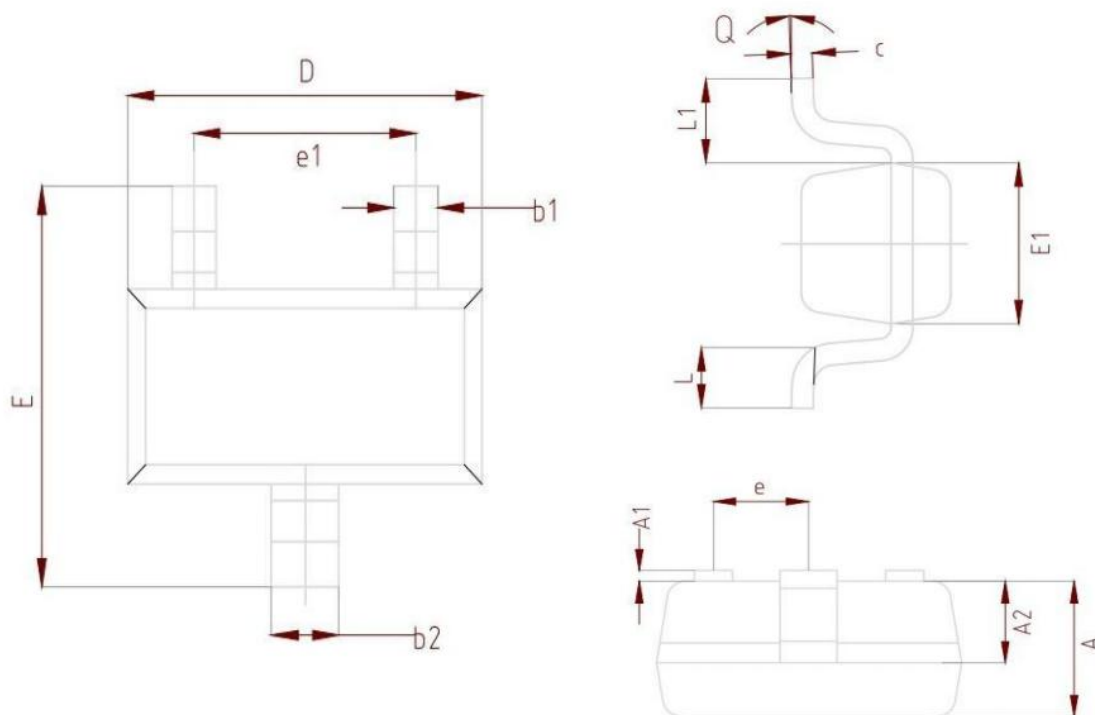
Dimensions in mm



COMMON DIMENSION(MM)			
PKG	SOT-723		
SYMBOL	MIN	TYP	MAX
A	0.420	0.450	0.480
A1	0.100	0.110	0.120
b	0.230	0.250	0.280
C	0.180	0.200	0.235
D	1.150	1.200	1.300
E	0.750	0.800	0.850
L	1.170	1.200	1.240
e	0.750	0.800	0.850
Q	8°		

SOT-523

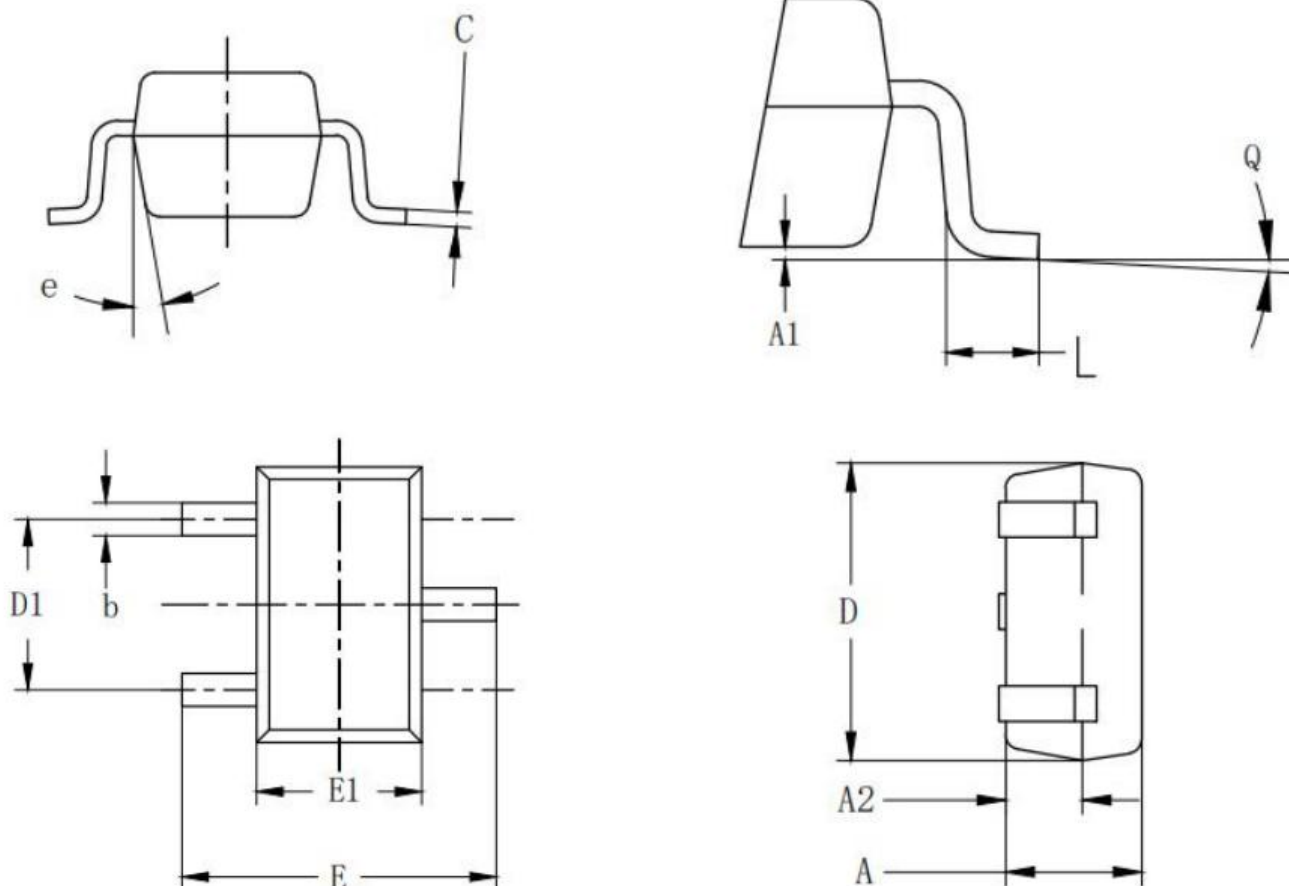
Dimensions in mm



COMMON DIMENSION(MM)			
PKG		SOT-523	
SYMBOL	MIN	TYP	MAX
A	0.720	0.750	0.780
A1	0.000	0.050	0.100
A2	0.400	0.450	0.500
b1	0.150	0.200	0.250
b2	0.250	0.300	0.350
C	0.102	0.110	0.118
D	1.550	1.600	1.650
E	1.450	1.600	1.750
E1	0.700	0.800	0.900
e		0.500 TYP	
e1	0.900	1.000	1.100
L	0.260	0.360	0.460
L1		0.400REF	
Q	0°	4°	8°

SOT-323

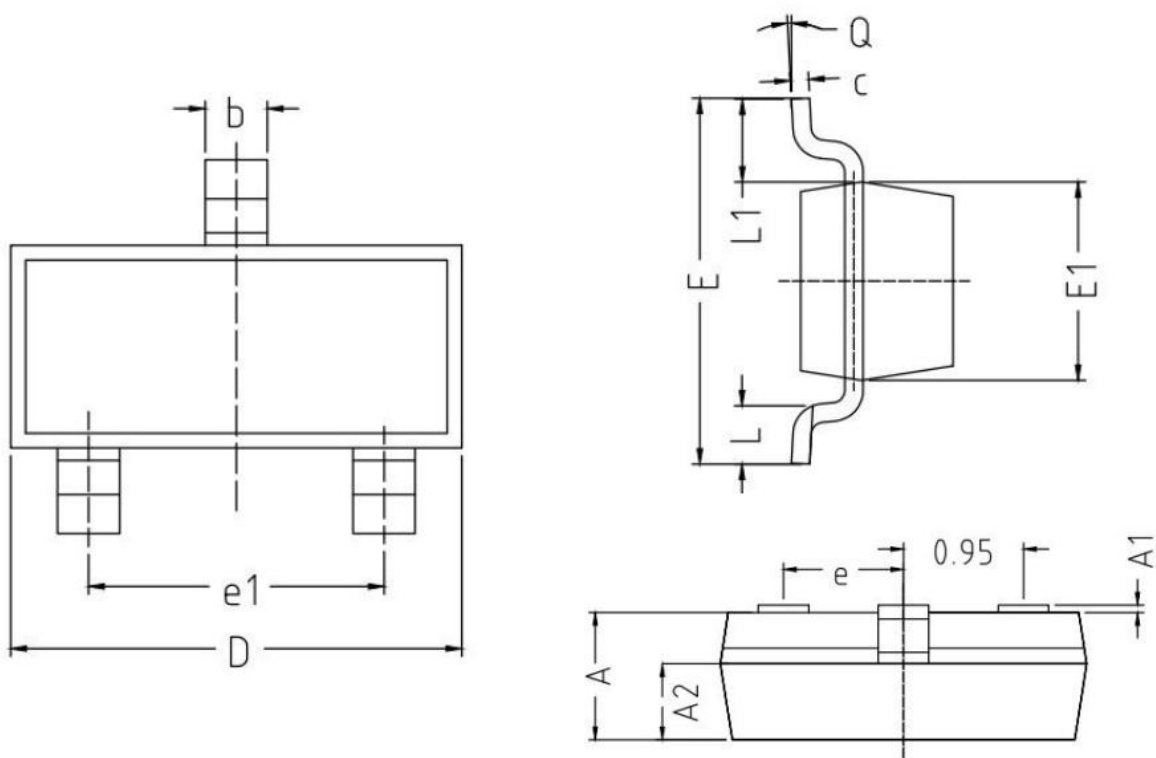
Dimensions in mm



COMMON DIMENSION(MM)			
PKG		SOT-323	
SYMBOL	MIN	TYP	MAX
A	0.910	0.960	1.010
A1	0.010	0.060	0.150
A2	0.500	0.540	0.600
b	0.200	0.250	0.310
c	0.100	0.110	0.120
D	2.050	2.100	2.250
D1	1.250	1.300	1.350
E	2.390	2.400	2.410
E1	1.200	1.260	1.350
L	0.260	0.360	0.460
e		10°	
Q	0°	4°	8°

SOT-23

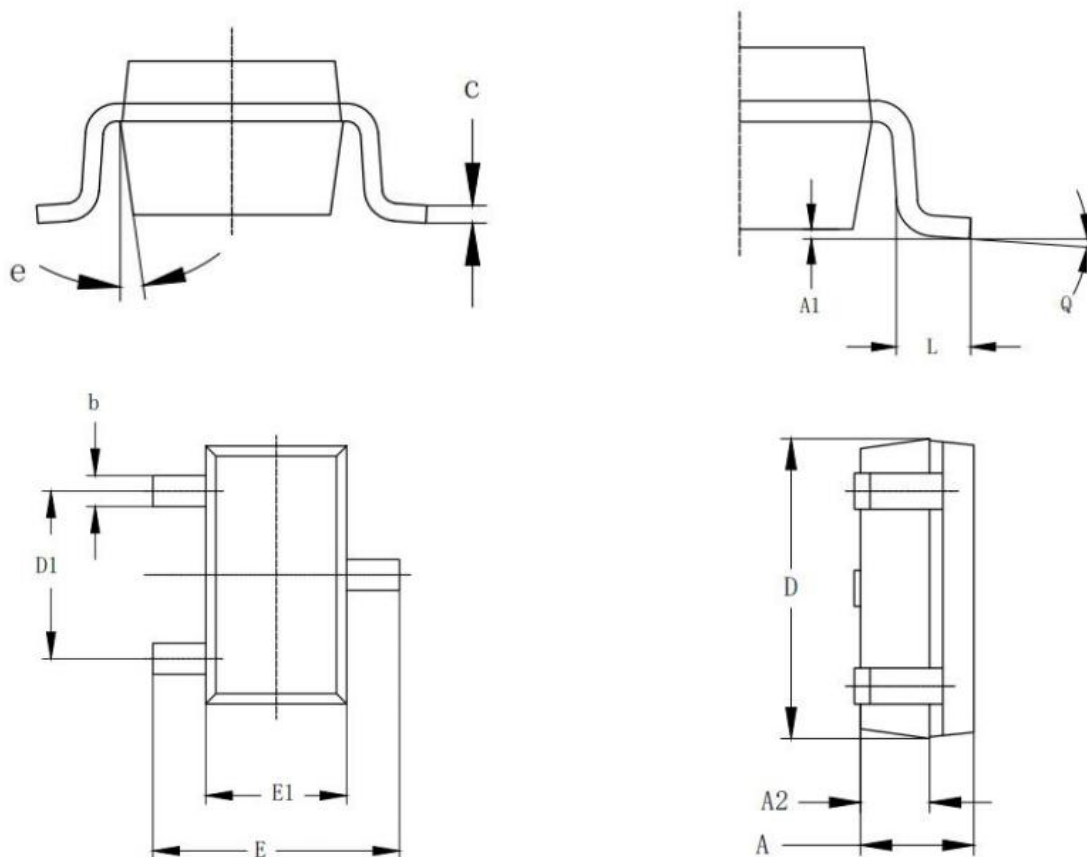
Dimensions in mm



COMMON DIMENSION(MM)			
PKG		SOT-23	
SYMBOL	MIN	TYP	MAX
A	0.950	1.000	1.050
A1	0.000	0.050	0.100
A2	0.570	0.600	0.630
b	0.350	0.400	0.450
c	0.100	0.130	0.200
D	2.800	2.900	3.000
E	2.250	2.400	2.550
E1	1.200	1.300	1.400
e		0.950 TYP	
e1	1.800	1.900	2.000
L	0.290	0.390	0.490
L1		0.550REF	
Q	0°	4°	8°

SOT-23-3L

Dimensions in mm



COMMON DIMENSION(MM)			
PKG		SOT23-3L	
SYMBOL	MIN	TYP	MAX
A	1.080	1.100	1.120
A1	0.010	0.060	0.150
A2	0.640	0.670	0.700
b	0.325	0.350	0.375
c	0.125	0.135	0.150
D	2.920	2.930	2.980
D1	1.875	1.900	1.925
E	2.650	2.800	2.950
E1	1.580	1.600	1.670
L	0.300	0.450	0.600
e		8°	
Q	0°	4°	8°