

General Description

The WST6006 is the highest performance trench N-CH MOSFET with extreme high cell density, which provide excellent $R_{DS(on)}$ and gate charge for most of the small power switching and load switch applications.

The WST6006 meet the RoHS and Green Product requirement with full function reliability approved.

Features

- High-speed switching
- Green Device Available
- ESD Protected:2KV

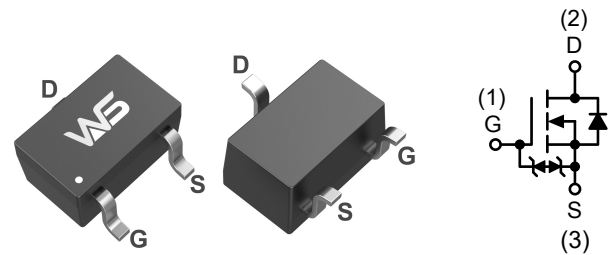
Product Summary

BV_{DSS}	$R_{DS(on)}$	I_D
60V	1400mΩ	0.115A

Applications

- High Frequency Point-of-Load Synchronous Buck Converter for MB/NB/UMPC
- Networking DC-DC Power System
- Load Switch

SOT-323-3L Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_A=25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10V^1$	0.115	A
$I_D@T_A=70^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10V^1$	0.075	A
I_{DM}	Pulsed Drain Current ²	1.0	A
$P_D@T_A=25^\circ\text{C}$	Total Power Dissipation ³	0.2	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	---	625	$^\circ\text{C/W}$

Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	60	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BV_{DSS} Temperature Coefficient	Reference to 25°C , $I_D=1mA$	---	0.05	---	V/ $^\circ\text{C}$
$R_{DS(on)}$	Static Drain-Source On-Resistance ²	$V_{GS}=10V$, $I_D=0.5A$	---	1400	2200	m Ω
		$V_{GS}=4.5V$, $I_D=0.05A$	---	1800	2500	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1	1.6	2.5	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-3.7	---	mV/ $^\circ\text{C}$
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=60V$, $V_{GS}=0V$, $T_J=25^\circ\text{C}$	---	---	1	μA
		$V_{DS}=60V$, $V_{GS}=0V$, $T_J=55^\circ\text{C}$	---	---	5	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 10	μA
g_{fs}	Forward Transconductance	$V_{DS}\geq 2.0V$, $DS(on)$, $I_D=200mA$	---	80	---	mS
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=25V$, $I_D=500mA$, $R_G=25\Omega$, $R_L=50\Omega$, $V_{GS}=10V$	---	1.8	3.3	ns
T_r	Rise Time		---	7	6	
$T_{d(off)}$	Turn-Off Delay Time		---	6.8	13.6	
T_f	Fall Time		---	11	40	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1MHz$	---	17	50	pF
C_{oss}	Output Capacitance		---	10	25	
C_{rss}	Reverse Transfer Capacitance		---	2.5	5.0	

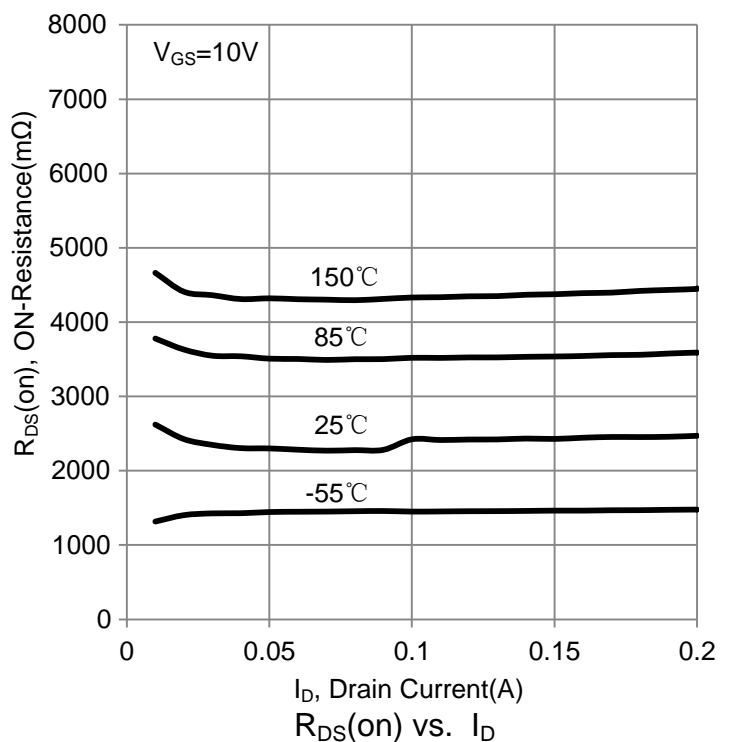
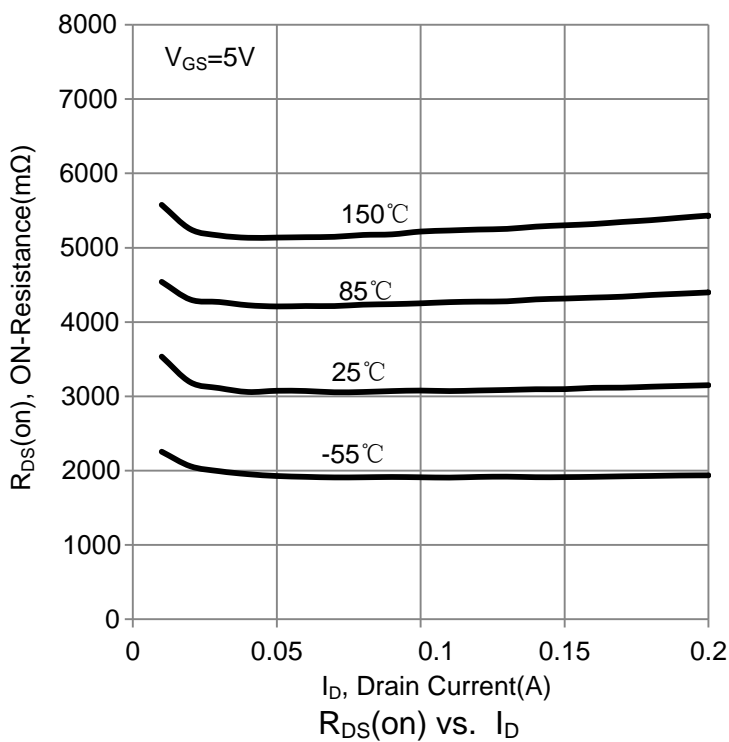
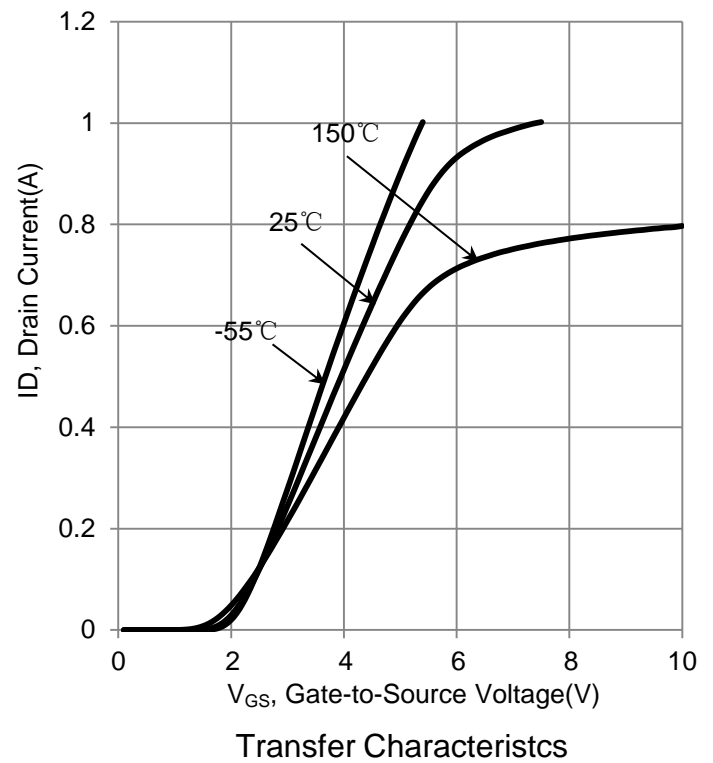
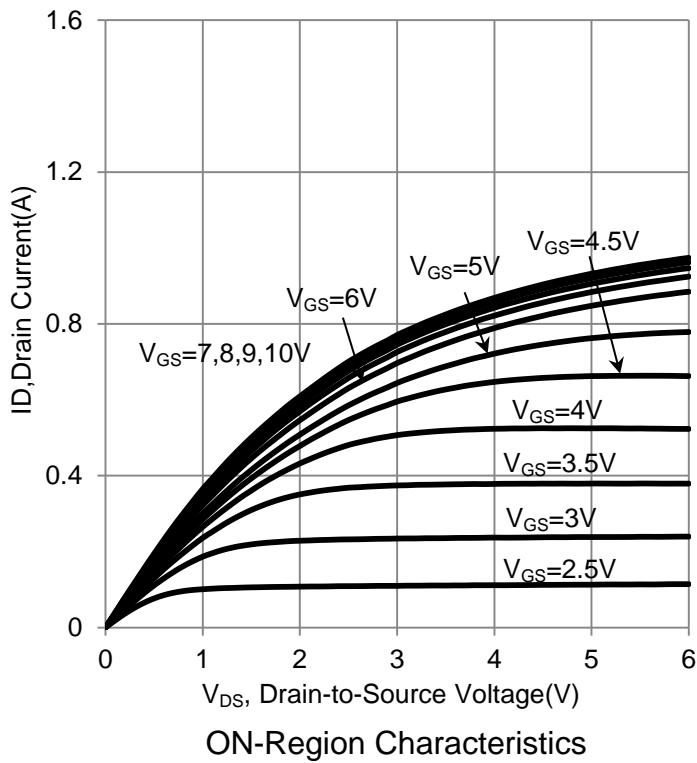
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current ^{1,4}	$V_G=V_D=0V$, Force Current	---	---	0.115	A
I_{SM}	Pulsed Source Current ^{2,4}		---	---	0.8	A
V_{SD}	Diode Forward Voltage ²	$I_S=115mA$, $V_{GS}=0V$	---	---	1.5	V

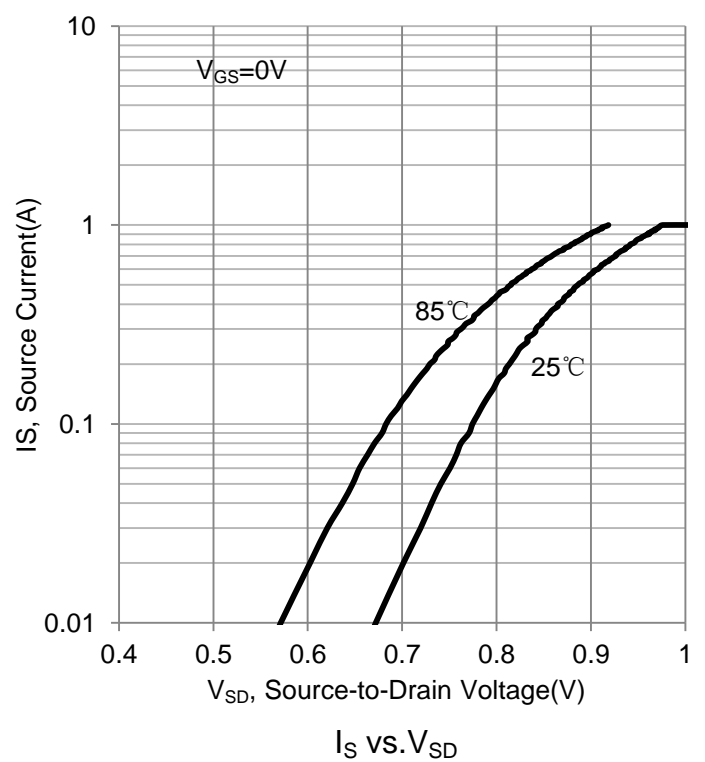
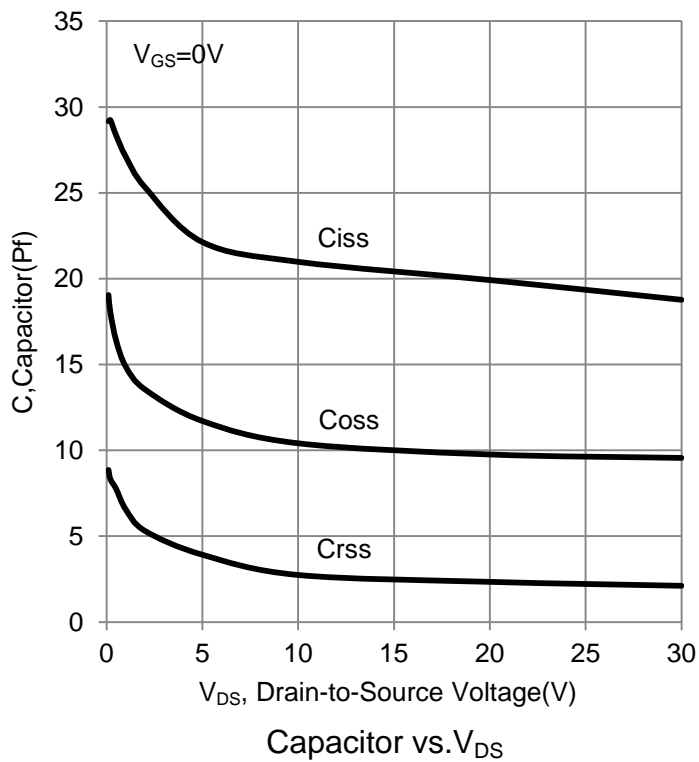
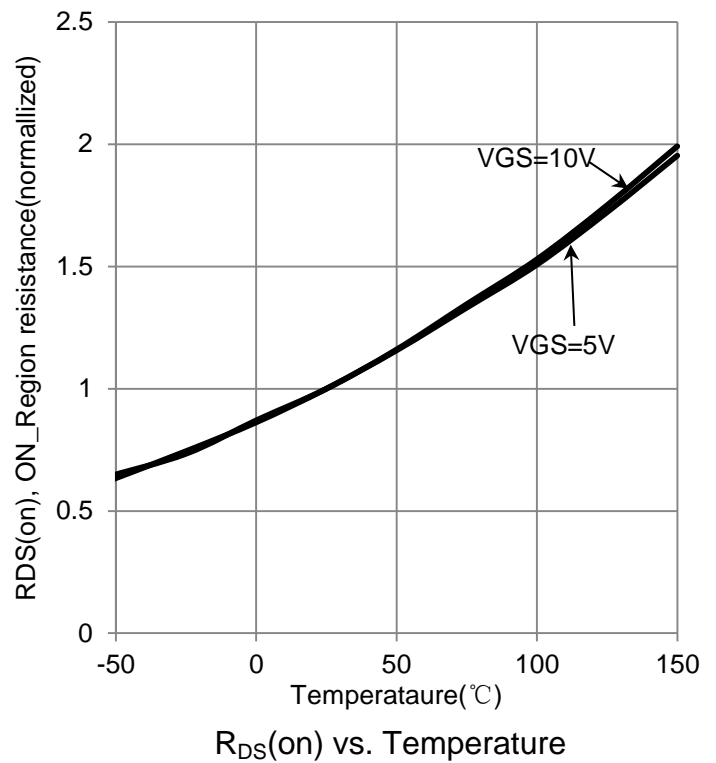
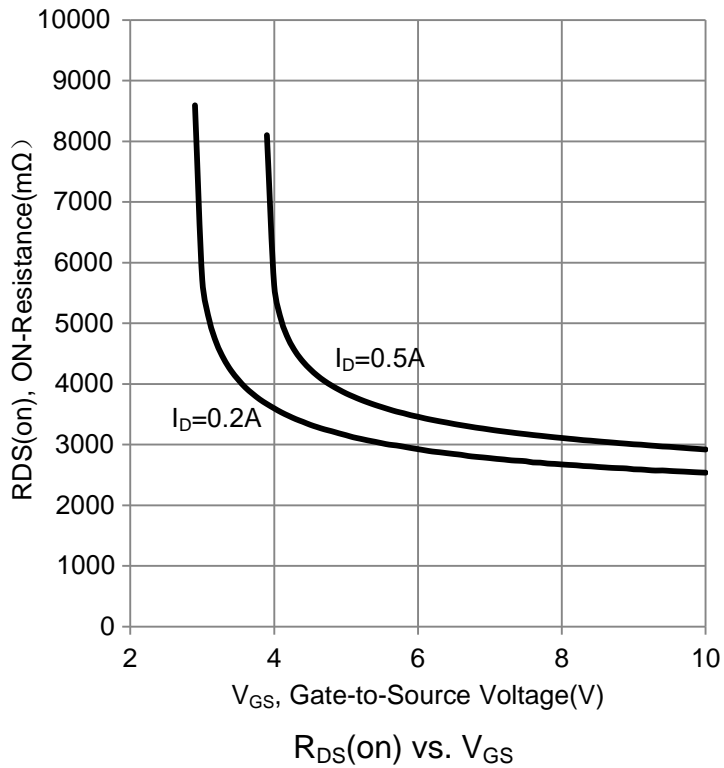
Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3.The power dissipation is limited by 150°C junction temperature.
- 4.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

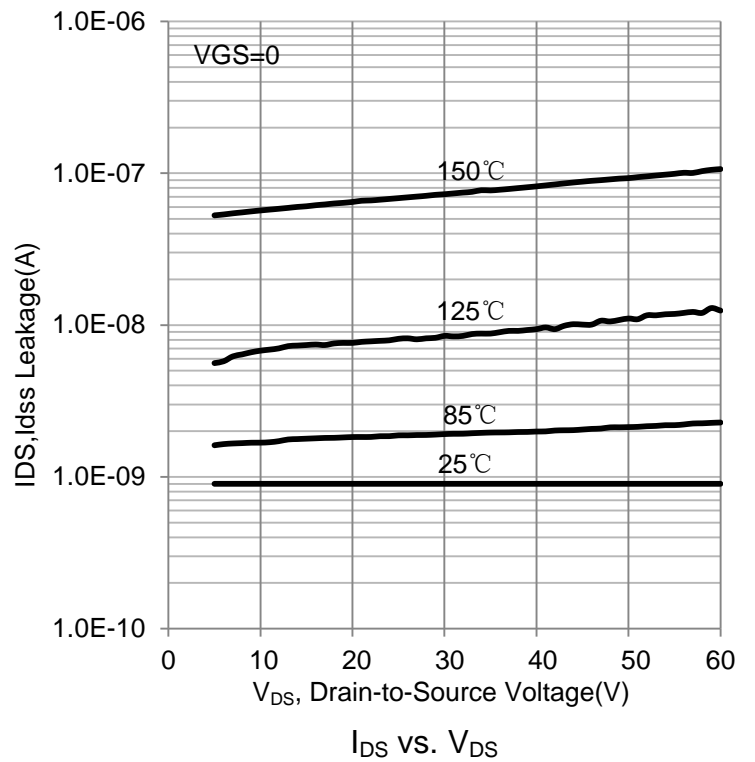
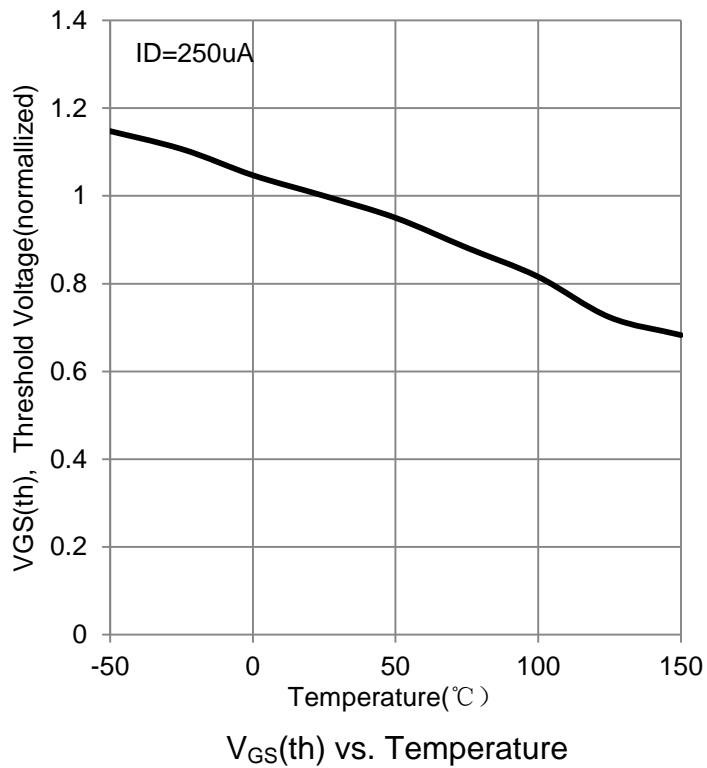
Typical Characteristics



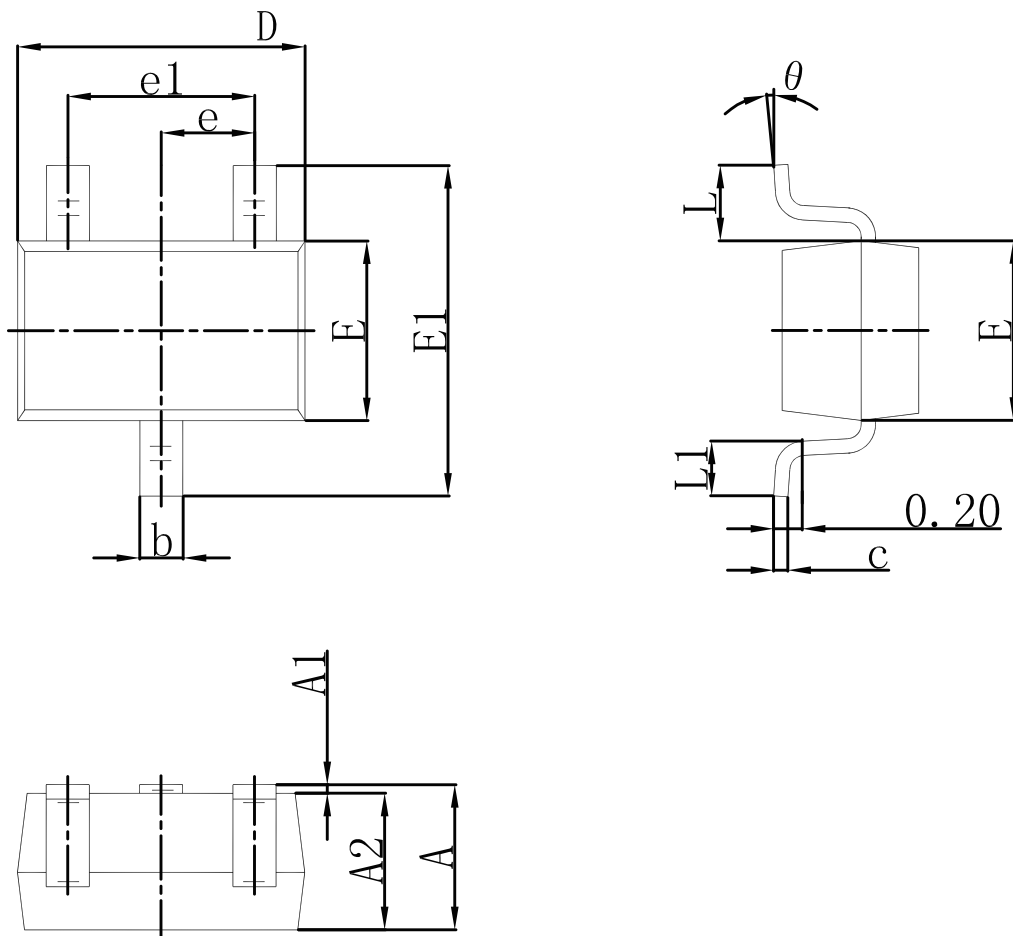
Typical Characteristics



Typical Characteristics



Packaging information



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°

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