

Plastic-Encapsulate MOSFETS

P-Channel 20-V(D-S) MOSFET

GENERAL DESCRIPTION

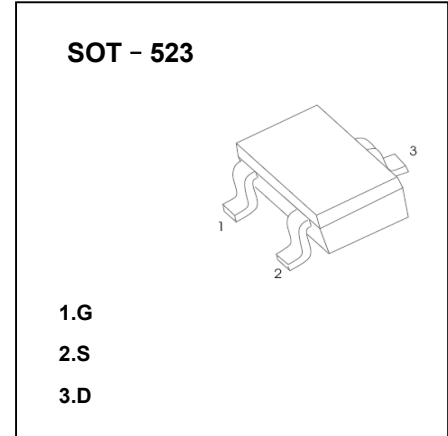
The BC1501S is the P-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance.

FEATURES

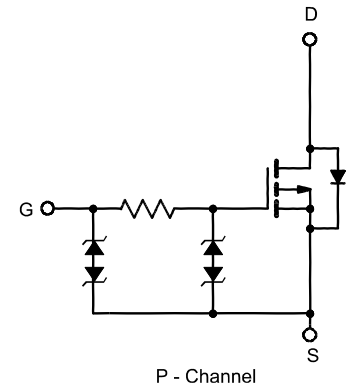
- $R_{DS(ON)} = 0.48\Omega @ V_{GS} = -4.5V$
- $R_{DS(ON)} = 0.67\Omega @ V_{GS} = -2.5V$
- $R_{DS(ON)} = 0.95\Omega @ V_{GS} = -1.8V$
- $R_{DS(ON)} = 2.20\Omega @ V_{GS} = -1.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- Capable doing Cu wire bonding

APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System



MARKING: 1 S



Absolute Maximum Ratings ($T_A = 25^\circ C$ Unless Otherwise Noted)

Parameter	Symbol	Maximum Ratings	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 6	V

Electrical Characteristics (T_J = 25°C Unless Otherwise Specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250 μA	-20			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250 μA	-0.45		-1.2	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±4.5V			±10	μA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-16V, V _{GS} =0V			-1	μA
R _{DS(ON)}	Drain-Source On-Resistance ^a	V _{GS} =-4.5V, I _D =-780mA		0.35	0.48	Ω
		V _{GS} =-2.5V, I _D =-660mA		0.44	0.67	
		V _{GS} =-1.8V, I _D =-100mA		0.55	0.95	
		V _{GS} =-1.5V, I _D =-100mA		0.78	2.20	
V _{SD}	Diode Forward Voltage	I _S =-350mA, V _{GS} =0V		-0.8	-1.2	V
DYNAMIC						
C _{iss}	Input Capacitance	V _{DS} =-16V, V _{GS} =0V, f=1MHZ		152		pF
C _{oss}	Output Capacitance			18.5		
C _{rss}	Reverse Transfer Capacitance			6		
Q _g	Total Gate Charge	V _{DS} =-16V, V _{GS} =-4.5V, I _D =-200mA		2.8		nC
Q _{gs}	Gate-Source Charge			2.1		
Q _{gd}	Gate-Drain Charge			0.5		
t _{d(on)}	Turn-On Delay Time	V _{DD} =-10V, R _L =50 Ω V _{GEN} =-5V, R _G =10 Ω I _D =-200mA		51.3		ns
t _r	Turn-On Rise Time			24.2		
t _{d(off)}	Turn-Off Delay Time			246		
t _f	Turn-Off Fall Time			81.2		

Notes: a. Based on Eutectic paste and bond wire Cu wire 1milx1(S), Cu wire 1milx1(G) on each die of SOT-523 package.

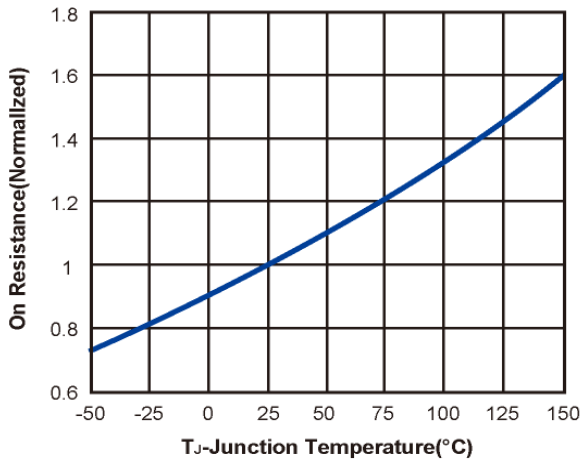
b. Pulse test; pulse width ≤ 300us, duty cycle ≤ 2%.

c. Force mos reserves the right to improve product design, functions and reliability without notice.

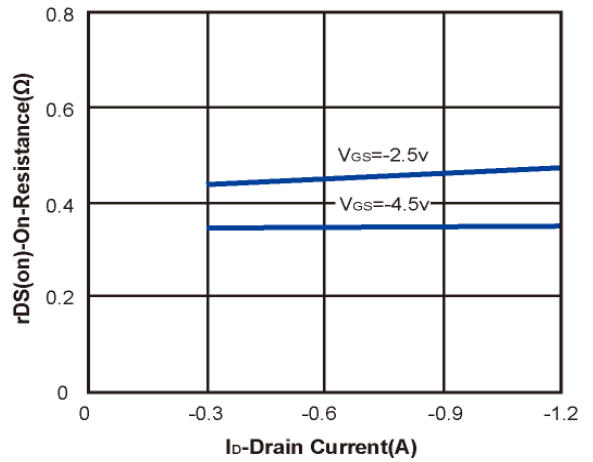


Typical Characteristics (T_J = 25°C Noted)

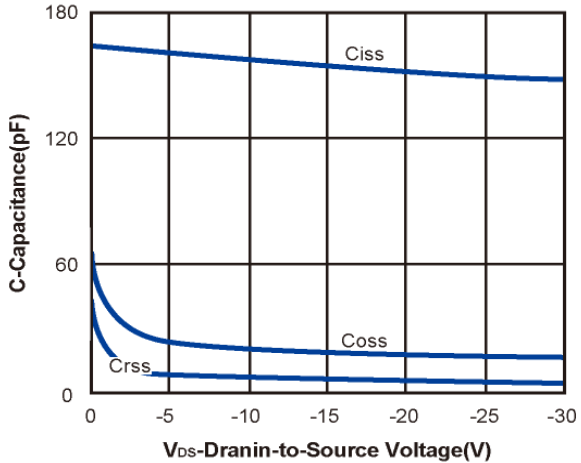
On Resistance vs. Junction Temperature



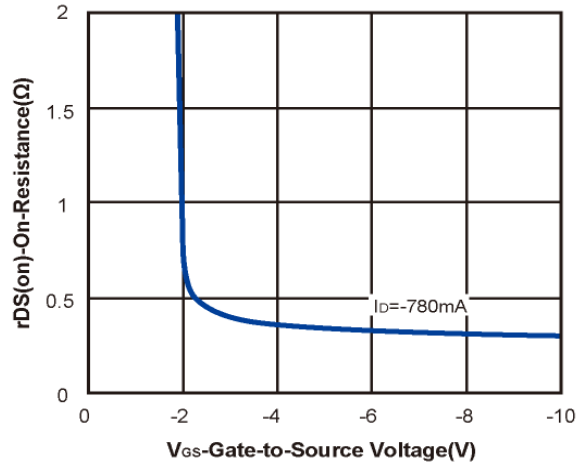
On Resistance vs. Drain Current



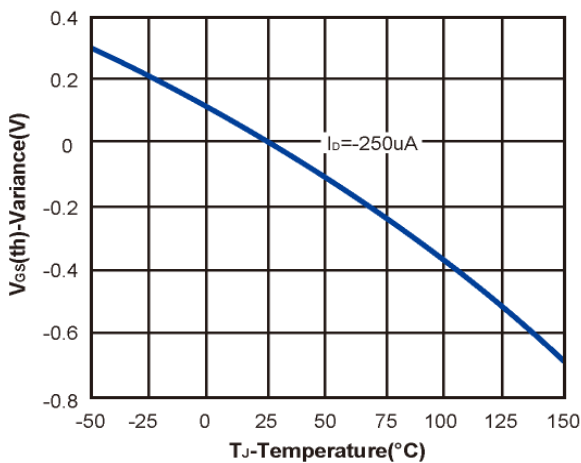
Capacitance



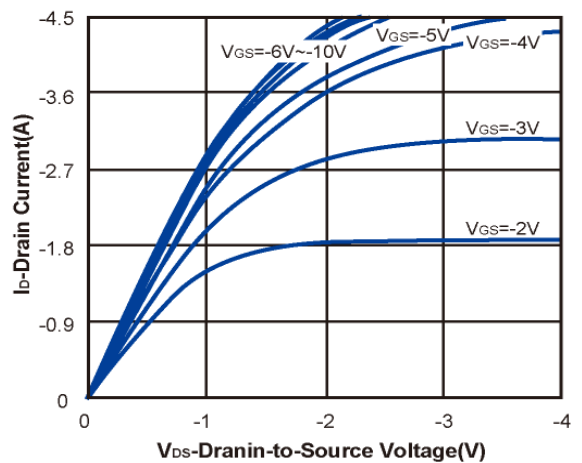
On Resistance vs. Gate-to-Source Voltage



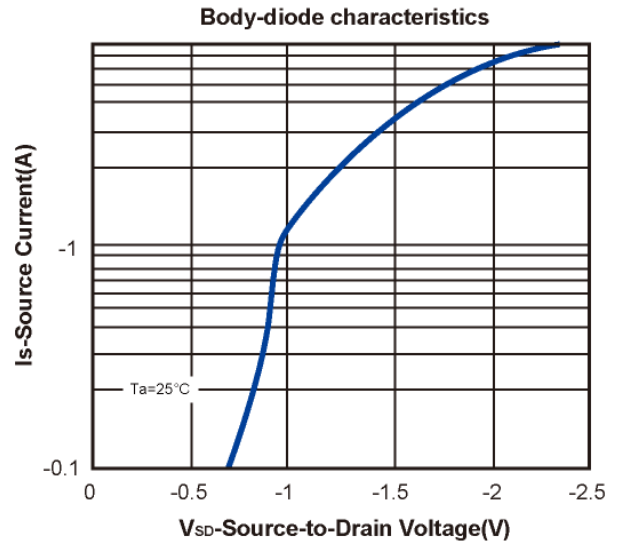
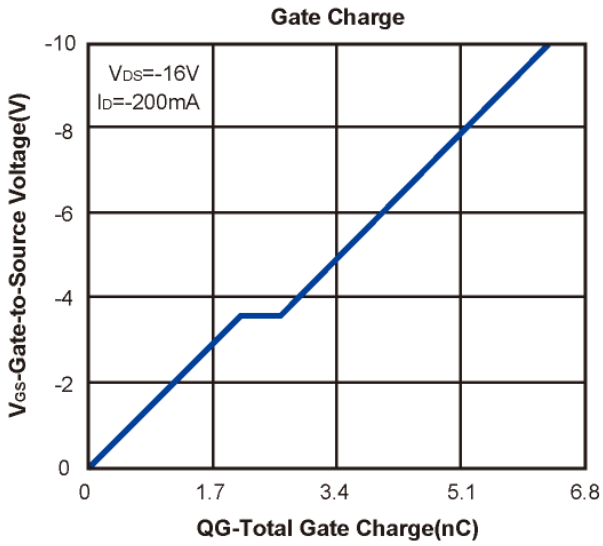
Threshold Voltage



On-Region Characteristics



Typical Characteristics (T_J =25°C Noted)





CHINA BASE
INTERNATIONAL

SOT-523

BC1501ST

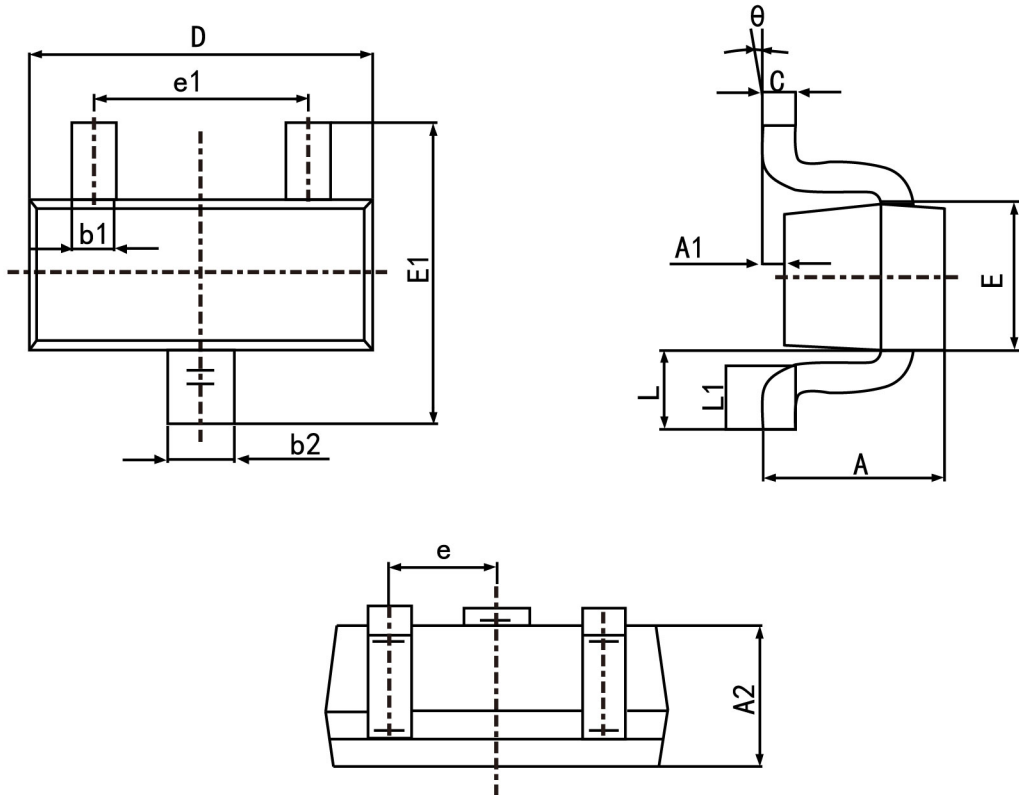


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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-523



Symbol	Dimension in Millimeters	
	Min	Max
A	0.700	0.900
A1	0.000	0.100
A2	0.700	0.800
b1	0.150	0.250
b2	0.250	0.350
c	0.100	0.200
D	1.500	1.700
E	0.700	0.900
E1	1.450	1.750
e	0.500	TYP.
e1	0.900	1.100
L	0.400 REF.	
L1	0.260	0.460
θ	0°	8°