P-Channel Enhancement Mode MOSFET

BL500P04R

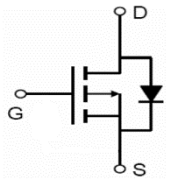
Features

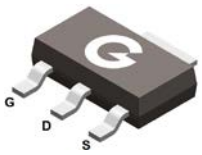
- Advanced trench cell design
- Extremely low threshold voltage

HF

Mechanical Data

- Case: SOT-223
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208





SOT-223

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL500P04R	SOT-223	4000 pcs / Tape & Reel	500P04R

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DSS}	-40	V
Gate-to-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current (T_A = 25°C)	I_D	-6	A
Pulsed Drain Current *3	I_{DM}	-24	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T_A = 25°C)	P_D	2	W
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	62.5	°C/W
Operating Junction Temperature Range	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

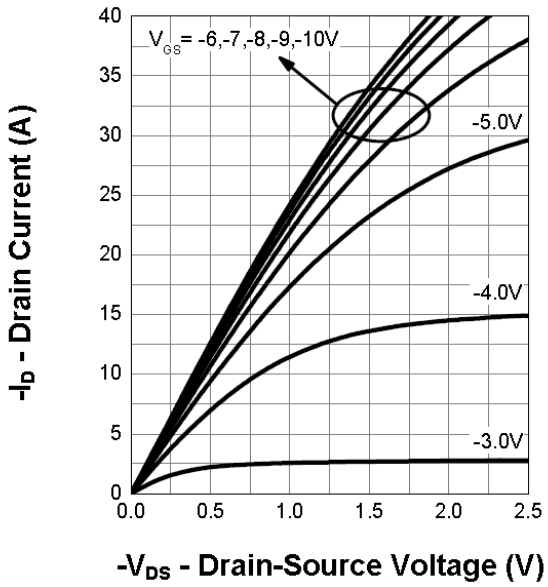
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = -250μA	-40	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -32V, V_{GS} = 0V	-	-	-1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS} = ±20V, V_{DS} = 0V	-	-	±100	nA
On Characteristics						
$R_{DS(ON)}$	Static Drain-Source On-resistance *3	V_{GS} = -10V, I_D = -3A	-	-	50	mΩ
		V_{GS} = -4.5V, I_D = -2A	-	-	75	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = -250μA	-1.3	-	-2.5	V
Dynamic Characteristics *4						
C_{ISS}	Input Capacitance	V_{GS} = 0V V_{DS} = -15V f = 1.0MHz	-	1150	-	pF
C_{OSS}	Output Capacitance		-	100	-	
C_{RSS}	Reverse Transfer Capacitance		-	77	-	
Switching Characteristics *4						
$t_{d(ON)}$	Turn-on Delay Time	V_{GS} = -10V V_{DD} = -20V I_D = -3A R_G = 3.3Ω	-	6.8	-	ns
t_r	Turn-on Rise Time		-	33	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	30	-	
t_f	Turn-Off Fall Time		-	12	-	
Q_G	Total Gate-Charge	V_{GS} = -10V V_{DD} = -32V I_D = -3A	-	20	-	nC
Q_{GS}	Gate to Source Charge		-	5.7	-	
Q_{GD}	Gate to Drain (Miller) Charge		-	4.6	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage *3	I_{SD} = -1A, V_{GS} = 0V	-	-	-1.3	V
I_{SD}	Source-Drain Current(Body Diode)	T_C = 25°C	-	-	-20	A
trr	Reverse Recovery Time	I_{SD} = - 3 A, dI_{SD} / dt = 100 A / μs	-	6.1	-	ns
Qrr	Reverse Recovery Charge		-	1.6	-	nC

Notes:

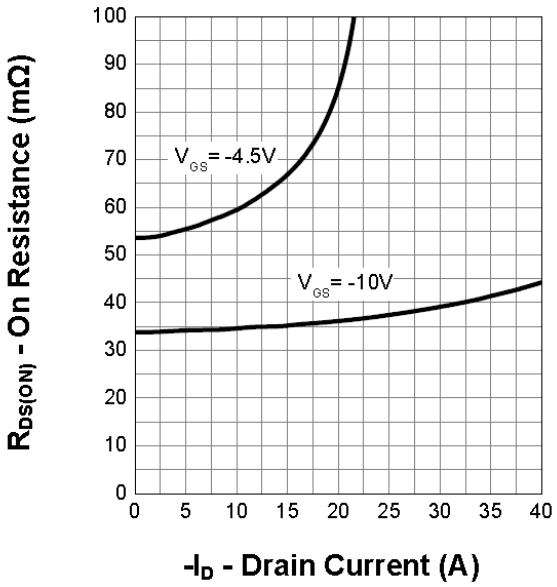
1. Mounted on PCB of 1 in^2 pad area
2. Mounted on Large Heat Sink
3. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%
4. Guaranteed by design, not subject to production testing

Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)

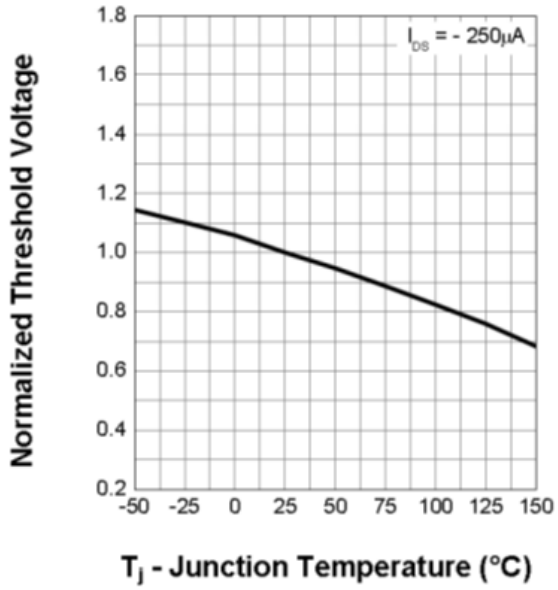
Output Characteristics



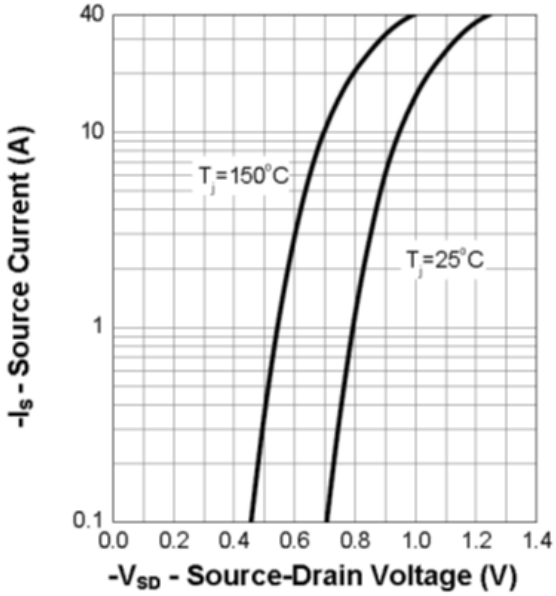
Drain-Source On Resistance



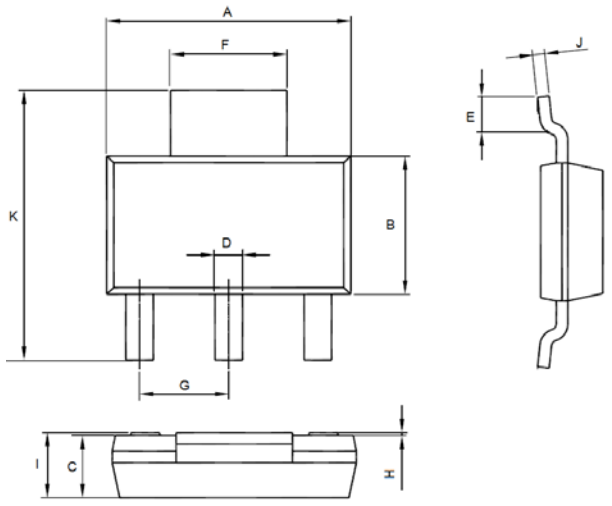
Normalized Threshold Voltage



Diode Forward Current



Package Outline Dimensions (Unit: mm)



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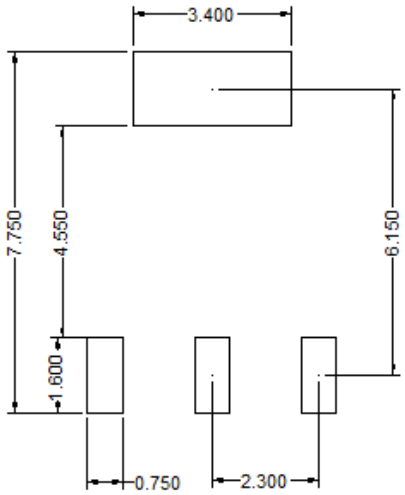
Dimension	**Min.**	**Max.**
A	6.10	6.50
B	3.30	3.70
C	1.50	1.70
D	0.66	0.82
E	0.90	1.15
F	2.90	3.10
G	2.20	2.40
H	0.02	0.10
I	1.52	1.80
J	0.20	0.40
K	6.70	7.30

Mounting Pad Layout (Unit: mm)

SOT-223



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