

### Features

- Super low gate charge
- Green device available
- Excellent  $C_{dv}/d_t$  effect decline
- Advanced high cell density trench technology

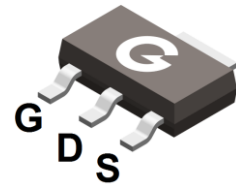
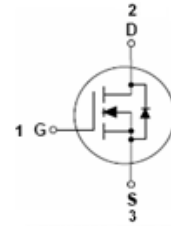
HF

### Application

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

### 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
BL2N60R	SOT-223	4000 pcs / Tape & Reel	2N60

## Maximum Ratings (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	$V_{DSS}$	600	V
Gate-to-Source Voltage	$V_{GSS}$	$\pm 30$	V
Continuous Drain Current	$I_D$	2	A
Continuous Drain Current ( $T_A = 100^\circ\text{C}$ )		1.26	A
Pulsed Drain Current	$I_{DM}$	8	A
Single Pulse Avalanche Energy <sup>*1</sup>	$E_{AS}$	75	mJ

## Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ( $T_A = 25^\circ\text{C}$ )	$P_D$	3	W
Thermal Resistance Junction-to-Air	$R_{\theta JA}$	41.7	$^\circ\text{C}/\text{W}$
Operating Junction Temperature Range	$T_J$	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

### Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
$V_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	600	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 600V, V_{GS} = 0V$	-	-	10	$\mu A$
$I_{GSS}$	Gate-Body Leakage Current	$V_{GS} = \pm 30V, V_{DS} = 0V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
$R_{DS(ON)}$	Static Drain-Source On-resistance <sup>*2</sup>	$V_{GS} = 10V, I_D = 1A$	-	3.9	5	$\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	3	4	V
$R_G$	Gate Resistance	$V_{GS} = 0V, f = 1MHz$	-	23.6	-	$\Omega$
<b>Dynamic Characteristics</b>						
$C_{ISS}$	Input Capacitance	$V_{GS} = 0V$	-	359	-	pF
$C_{OSS}$	Output Capacitance	$V_{DS} = 25V$	-	48	-	
$C_{RSS}$	Reverse Transfer Capacitance	$f = 1.0MHz$	-	17	-	
<b>Switching Characteristics</b>						
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD} = 300V$ $R_G = 25\Omega$ $I_D = 2.4A$	-	10	-	ns
$t_r$	Turn-on Rise Time		-	25	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	20	-	
$t_f$	Turn-Off Fall Time		-	25	-	
$Q_G$	Total Gate-Charge	$V_{DD} = 480V$	-	7.8	-	nC
$Q_{GS}$	Gate to Source Charge	$V_{GS} = 10V$	-	1.7	-	
$Q_{GD}$	Gate to Drain (Miller) Charge	$I_D = 2.4A$	-	2.3	-	
<b>Source-Drain Diode Characteristics</b>						
$V_{SD}$	Diode Forward Voltage <sup>*2</sup>	$I_{SD} = 2A, V_{GS} = 0V$	-	-	1.2	V
$t_{rr}$	Reverse Recovery Time	$I_{SD} = 2.4A, V_{GS} = 0V$	-	503	-	ns
$Q_{rr}$	Reverse Recovery Charge	$di/dt = 100A/\mu s$	-	1838	-	nC

Notes:

- The  $E_{AS}$  data shows Max. rating. The test condition is  $V_{DS} = 50V, V_{GS} = 10V, L = 64mH$
- The data tested by pulsed, pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$

Ratings and Characteristics Curves (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)

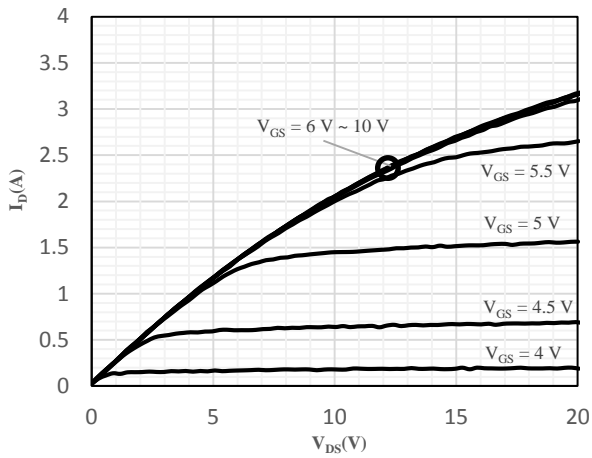


Fig 1 Typical Output Characteristics

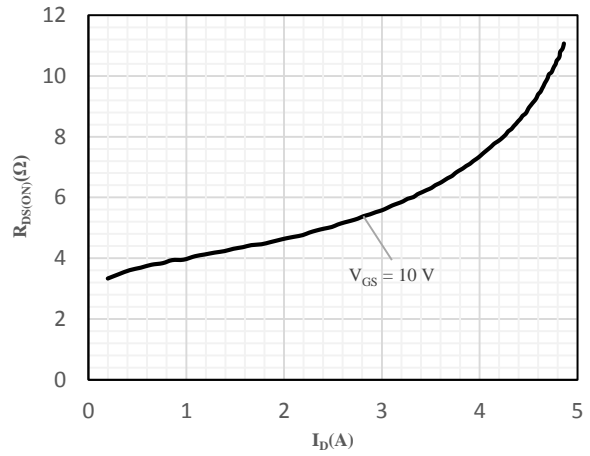


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

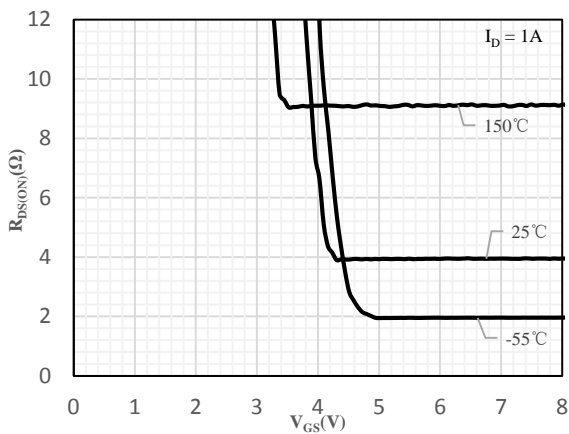


Fig 3 On-Resistance vs. Gate-Source Voltage

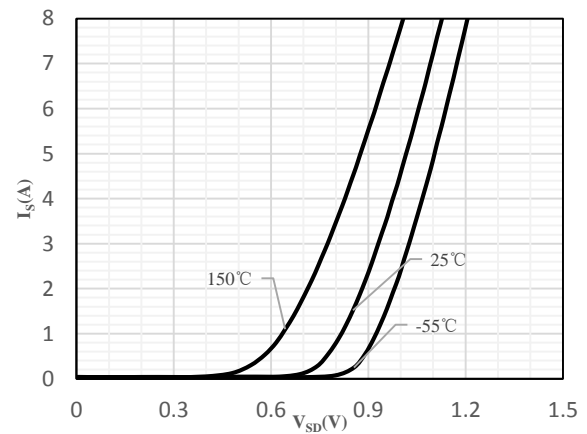


Fig 4 Body-Diode Characteristics

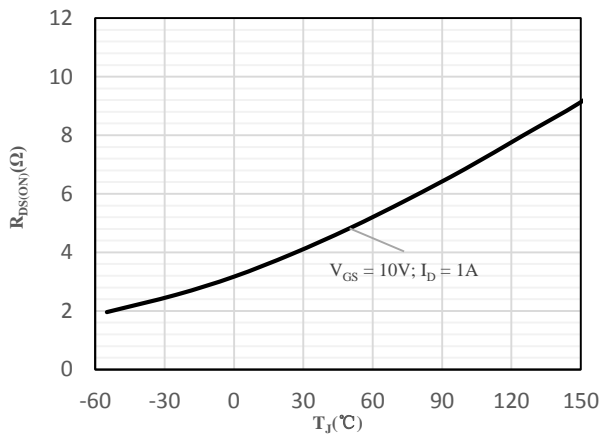


Fig 5 On-Resistance vs. Junction Temperature

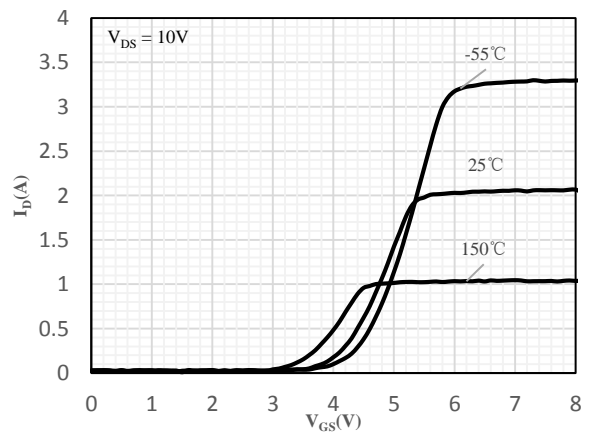


Fig 6 Transfer Characteristics

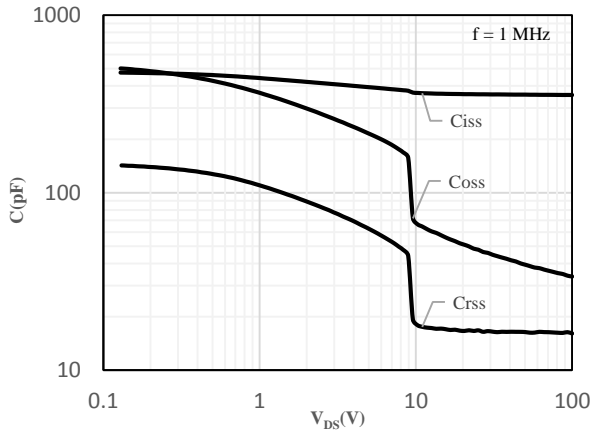


Fig 7 Capacitance Characteristics

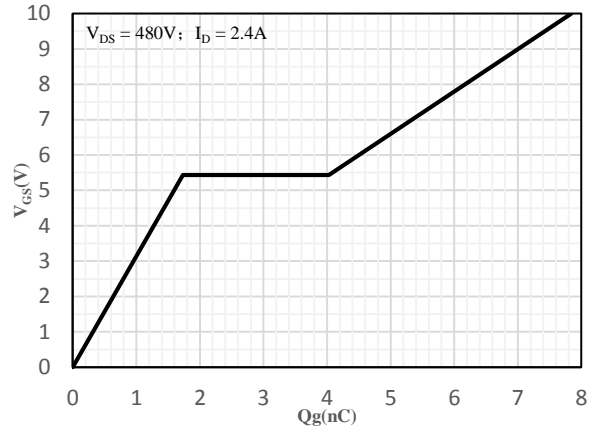


Fig 8 Gate-Charge Characteristics

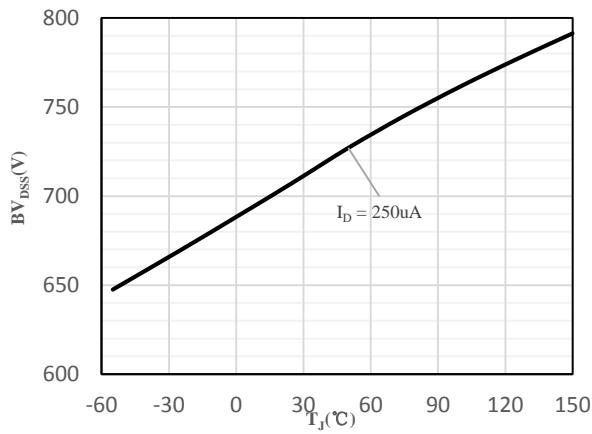


Fig 9 Breakdown Voltage vs. Junction  
Temperature

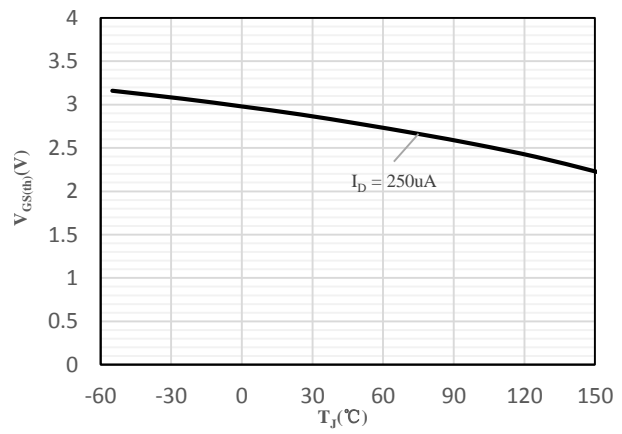
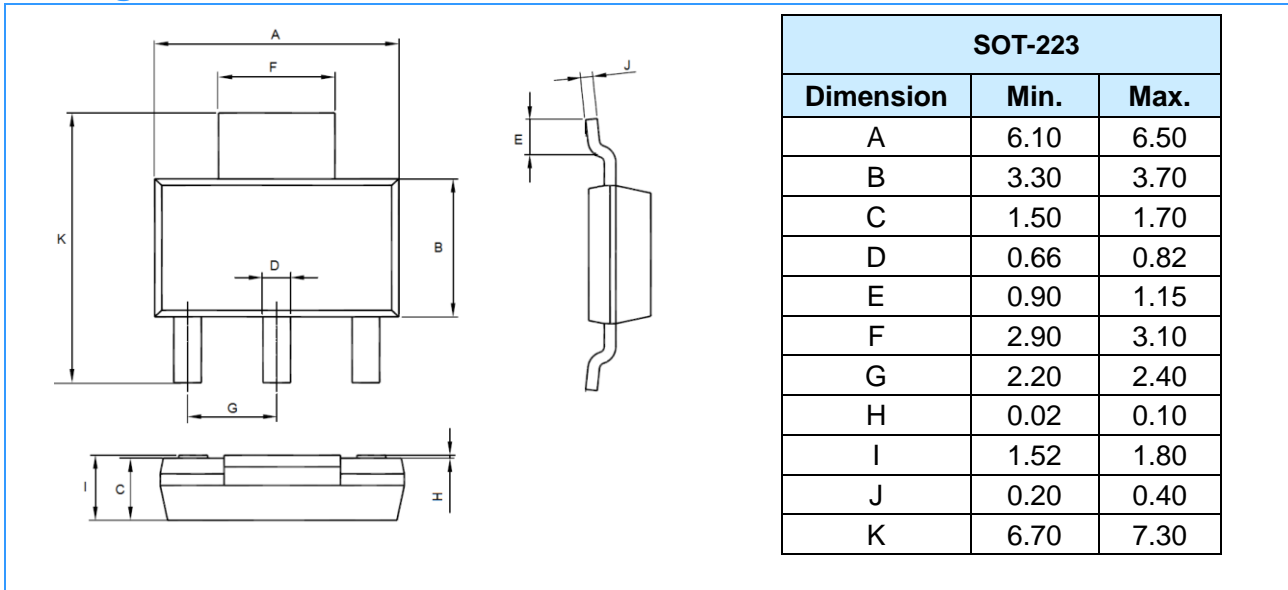
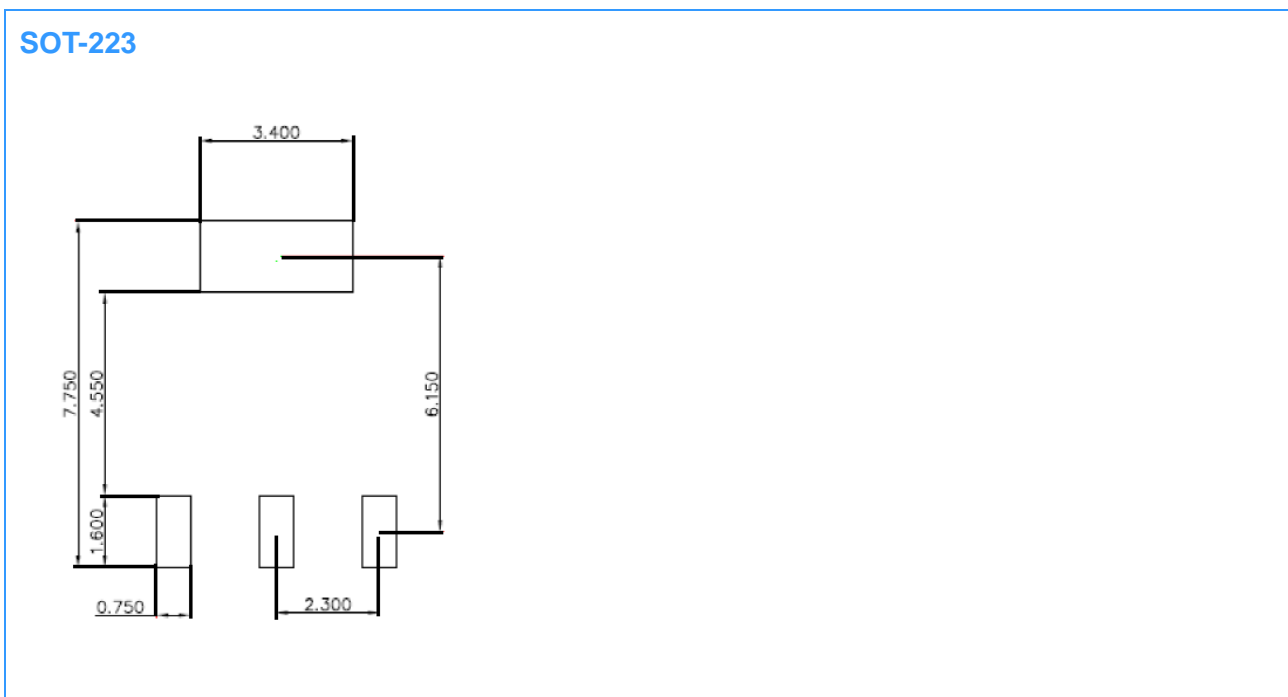


Fig 10  $V_{GS(th)}$  vs. Junction Temperature

**Package Outline Dimensions** (Unit: mm)



**Mounting Pad Layout** (Unit: mm)



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