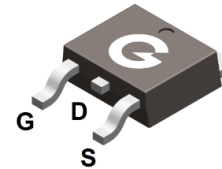
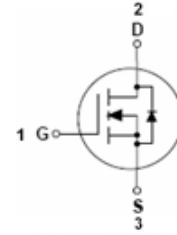


### Features

- Fast switching
- ESD improved capability
- Low gate charge
- Low reverse transfer capacitances

HF



TO-252

### Mechanical Data

- Case: TO-252
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208

**100%  $\Delta V_{DS}$  Tested!**

**100% UIS Tested!**

### Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL10N40D	TO-252	80 pcs / Tube or 2500 pcs / Tape & Reel	10N40D

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	$V_{DSS}$	400	V
Gate-to-Source Voltage	$V_{GSS}$	$\pm 30$	V
Continuous Drain Current ( $T_C = 25^\circ\text{C}$ )	$I_D$	10	A
Continuous Drain Current ( $T_C = 100^\circ\text{C}$ )		7	A
Pulsed Drain Current <sup>*1</sup>	$I_{DM}$	40	A
Single Pulse Avalanche Energy <sup>*2</sup>	$E_{AS}$	113	mJ

### Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation ( $T_C = 25^\circ\text{C}$ )	$P_D$	100	W
Thermal Resistance Junction-to-Air <sup>*1</sup>	$R_{\theta JA}$	100	$^\circ\text{C}/\text{W}$
Thermal Resistance Junction-to-Case <sup>*1</sup>	$R_{\theta JC}$	1.25	$^\circ\text{C}/\text{W}$
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	$V_{GS} = 0V, I_D = 250\mu A$	400	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = 400V, V_{GS} = 0V, T_J = 25^\circ\text{C}$	-	-	1	$\mu A$
		$V_{DS} = 320V, V_{GS} = 0V, T_J = 125^\circ\text{C}$	-	-	100	$\mu A$
$I_{GSS}$	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	$V_{GS} = 10V, I_D = 5A$	-	0.44	0.55	$\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	-	4.0	V
<b>Dynamic Characteristics</b>						
$C_{ISS}$	Input Capacitance	$V_{GS} = 0V$ $V_{DS} = 25V$ $f = 1.0\text{MHz}$	-	1210	-	pF
$C_{OSS}$	Output Capacitance		-	148	-	
$C_{RSS}$	Reverse Transfer Capacitance		-	8	-	
<b>Switching Characteristics</b>						
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD} = 200V$ $V_{GS} = 10V$ $R_G = 12\Omega$ $I_D = 10A$	-	18	-	ns
$t_r$	Turn-on Rise Time		-	23	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	41	-	
$t_f$	Turn-Off Fall Time		-	19	-	
$Q_G$	Total Gate-Charge	$V_{DD} = 200V$ $V_{GS} = 10V$ $I_D = 10A$	-	19.2	-	nC
$Q_{GS}$	Gate to Source Charge		-	3.6	-	
$Q_{GD}$	Gate to Drain (Miller) Charge		-	10.2	-	
<b>Source-Drain Diode Characteristics</b>						
$V_{SD}$	Diode Forward Voltage	$I_{SD} = 10A, V_{GS} = 0V, T_J = 25^\circ\text{C}$	-	-	1.5	V
$I_S$	Diode Continuous Forward Current		-	-	10	A
$t_{rr}$	Reverse Recovery Time	$V_{GS} = 0V, I_S = 10A,$ $di/dt = 100A/\mu s$	-	376	-	nS
$Q_{rr}$	Reverse Recovery Charge		-	2560	-	$\mu C$

Notes:

1. Repetitive rating; pulse width limited by maximum junction temperature
2. The EAS data shows Max. rating. The test condition is  $V_{DD} = 320V, V_{GS} = 10V, L = 0.5\text{mH}$

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

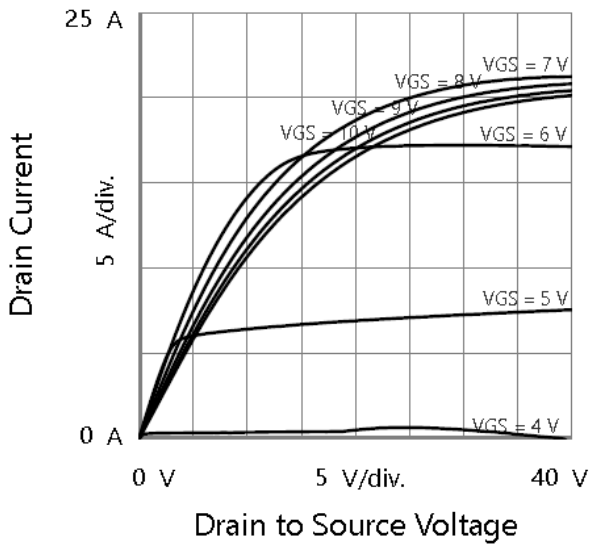


Fig. 1 On-Region Characteristics

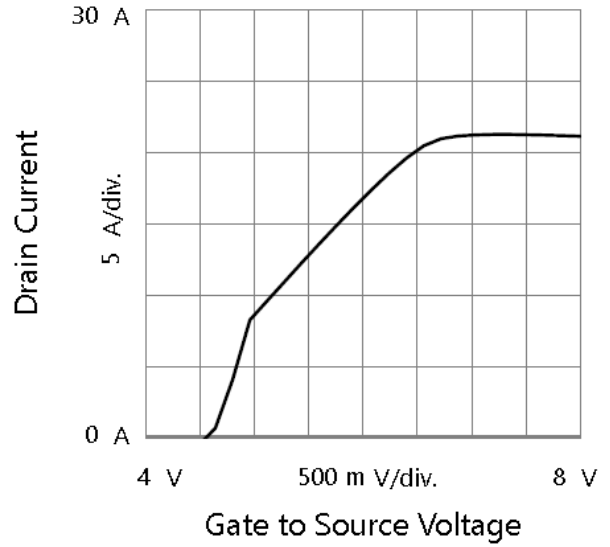


Fig. 2 Transfer Characteristics

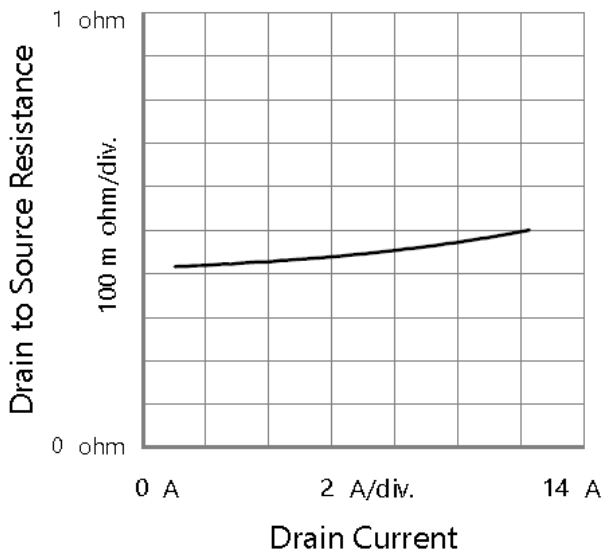


Fig. 3 On-Resistance vs. Drain Current and Gate Voltage

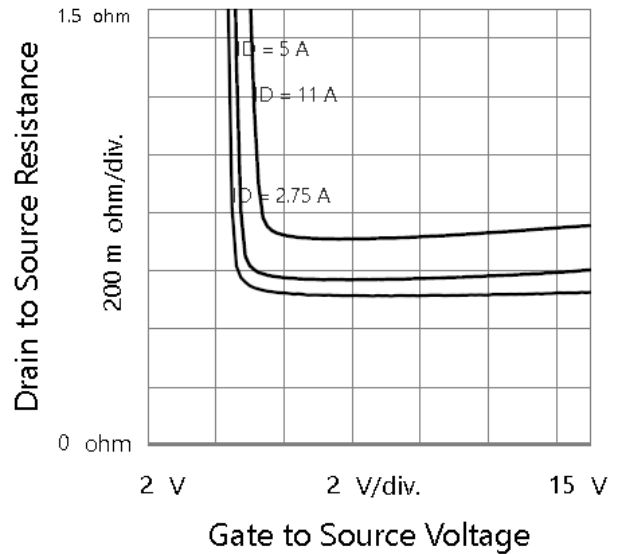
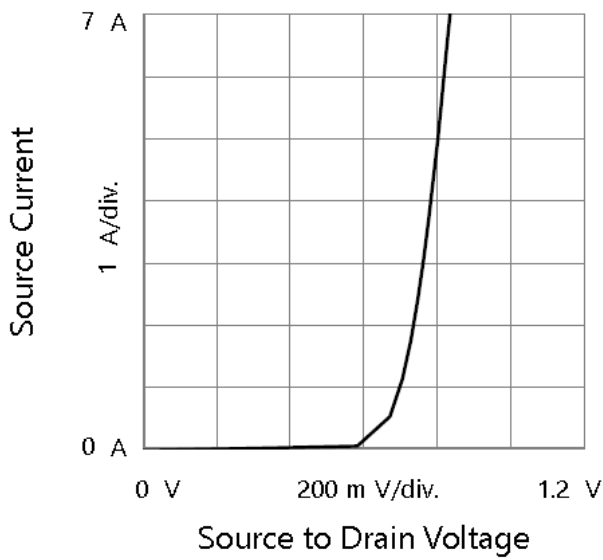
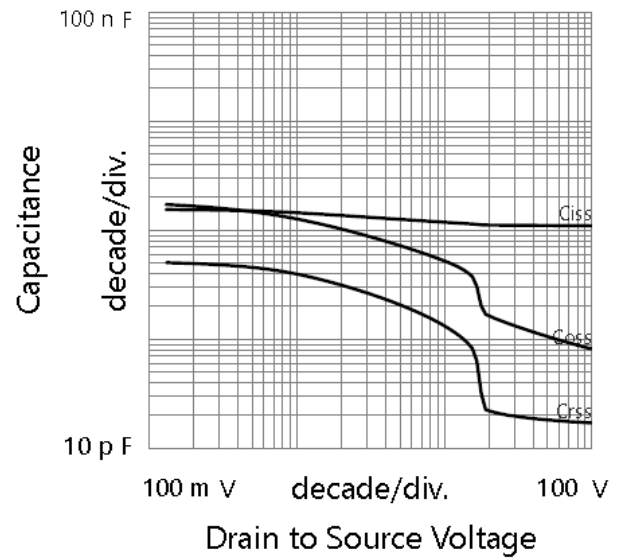


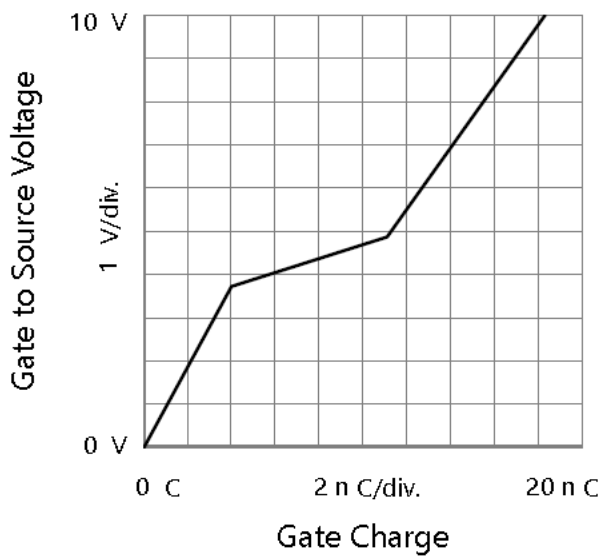
Fig. 4 On-Resistance vs. Gate-Source Voltage



**Fig. 5 Body-Diode Characteristics**

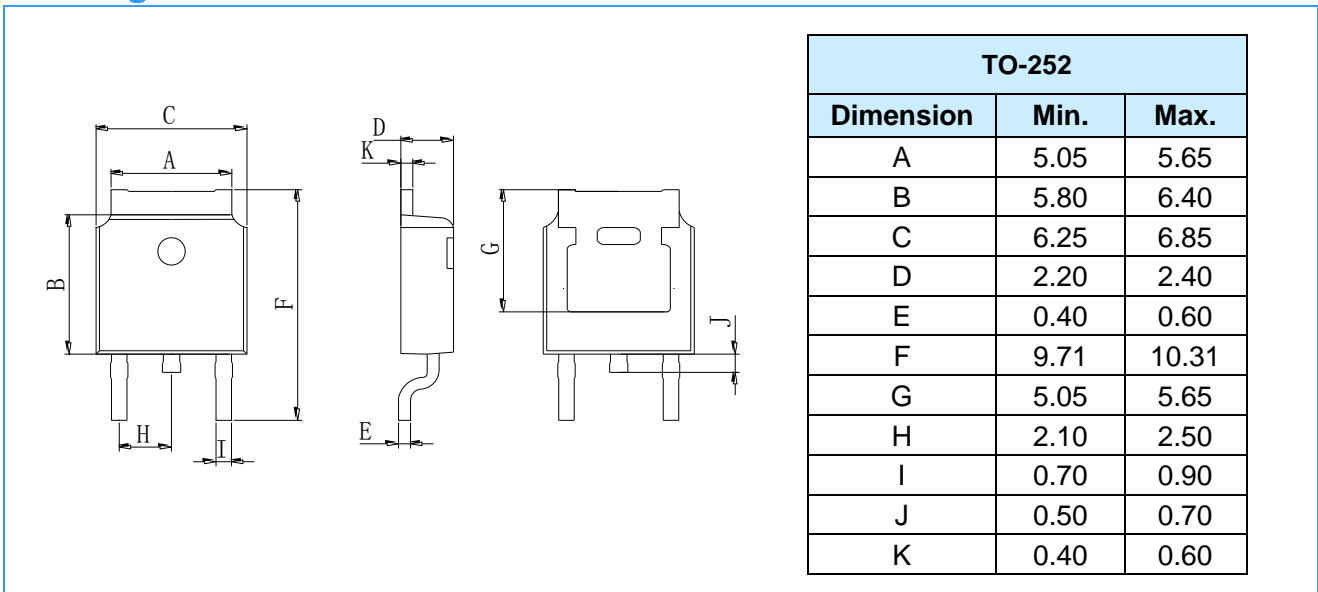


**Fig. 6 Capacitance Characteristics**

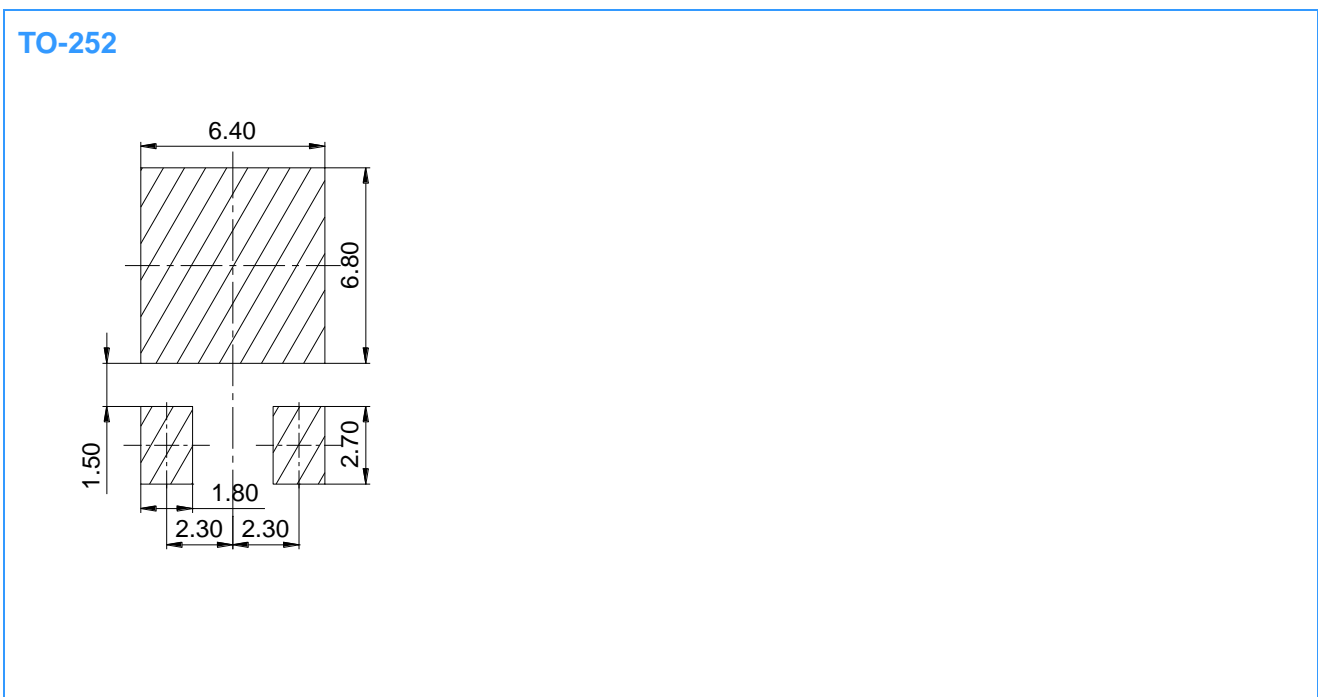


**Fig. 7 Gate-Charge Characteristics**

### Package Outline Dimensions (Unit: mm)



### Mounting Pad Layout (Unit: mm)



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