

Features

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

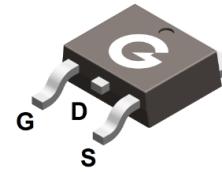
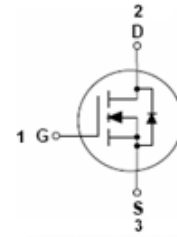
HF

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% ΔV_{DS} Tested!

100% UIS Tested!



TO-252

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_{DS}	400	V
Gate-to-Source Voltage	V_{GS}	± 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 ^{*1}	I_{DM}	40	A
Single Pulse Avalanche Energy ^{*2}	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 ^{*1}	$R_{\theta JA}$	100	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Case ^{*1}	$R_{\theta JC}$	1.25	$^\circ\text{C/W}$
Operating Junction Temperature Range	T_J	$-55 \sim +150$	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^\circ\text{C}$

Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ 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	400	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 400V, V _{GS} = 0V, T _J = 25°C	-	-	1	μA
		V _{DS} = 320V, V _{GS} = 0V, T _J = 125°C	-	-	100	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±30V, V _{DS} = 0V	-	-	±100	nA
On Characteristics						
R _{DS(ON)}	Static Drain-Source On-resistance	V _{GS} = 10V, I _D = 5A	-	0.44	0.55	Ω
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2.0	-	4.0	V
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = 25V f = 1.0MHz	-	1210	-	pF
C _{OSS}	Output Capacitance		-	148	-	
C _{RSS}	Reverse Transfer Capacitance		-	8	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time	V _{DD} = 200V V _{GS} = 10V R _G = 12Ω 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	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage	I _{SD} = 10A, V _{GS} = 0V, T _J = 25°C	-	-	1.5	V
I _S	Diode Continuous Forward Current		-	-	10	A
t _{rr}	Reverse Recovery Time	V _{GS} = 0V, I _S = 10A,	-	376	-	nS
Q _{rr}	Reverse Recovery Charge	di/dt = 100A/μs	-	2560	-	uC

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)

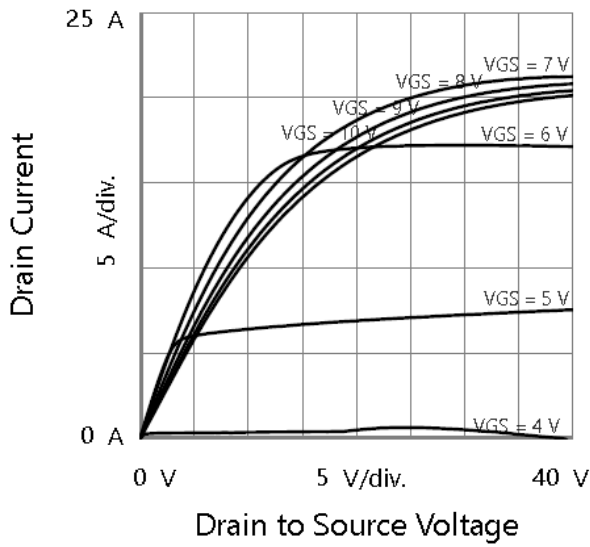


Fig. 1 On-Region Characteristics

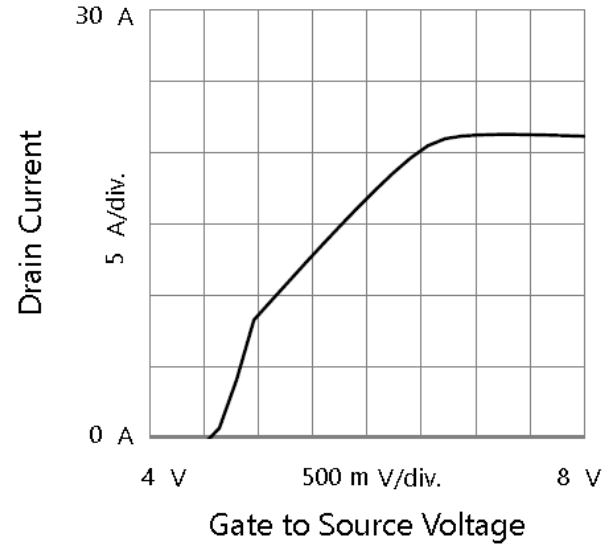


Fig. 2 Transfer Characteristics

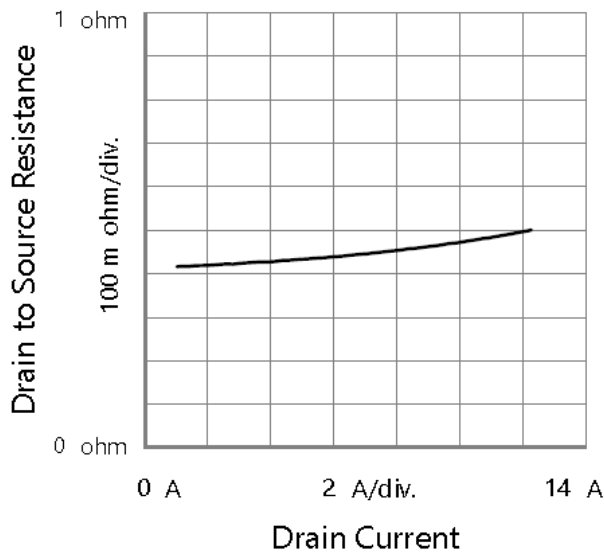


Fig. 3 On-Resistance vs. Drain Current
and Gate Voltage

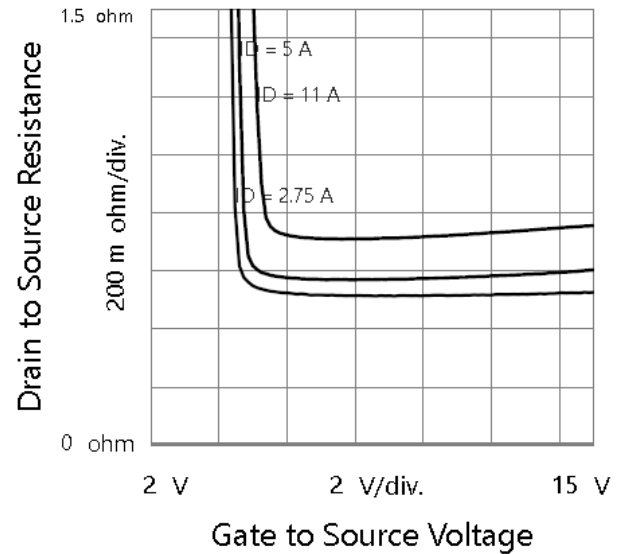


Fig. 4 On-Resistance vs. Gate-Source Voltage
and Gate Voltage

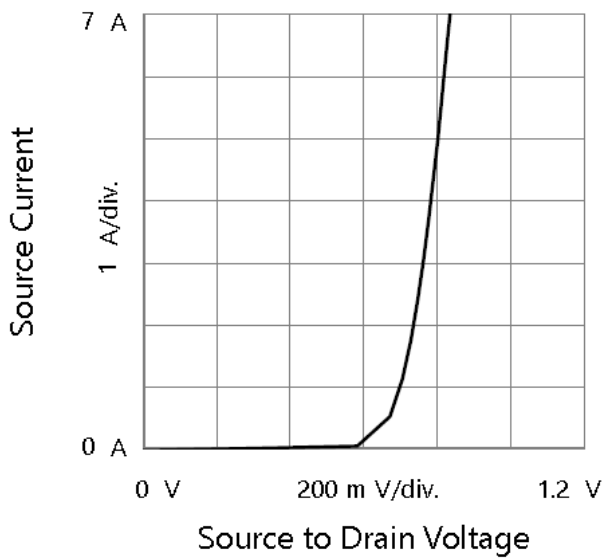


Fig. 5 Body-Diode Characteristics

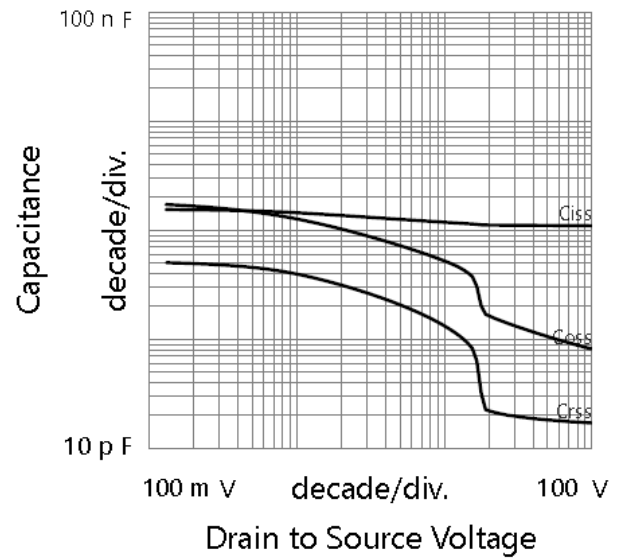


Fig. 6 Capacitance Characteristics

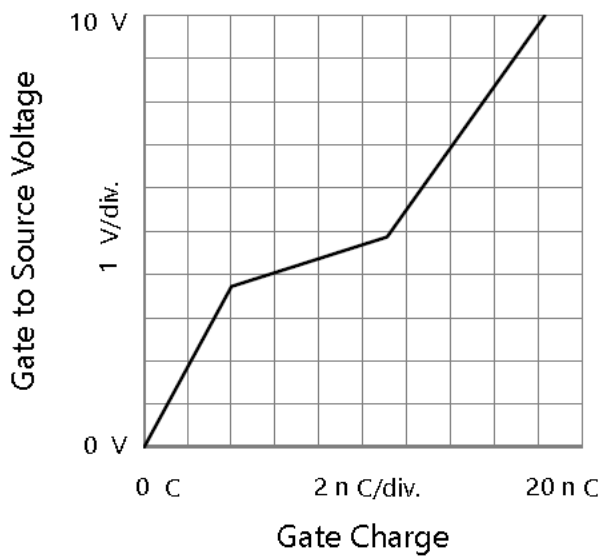
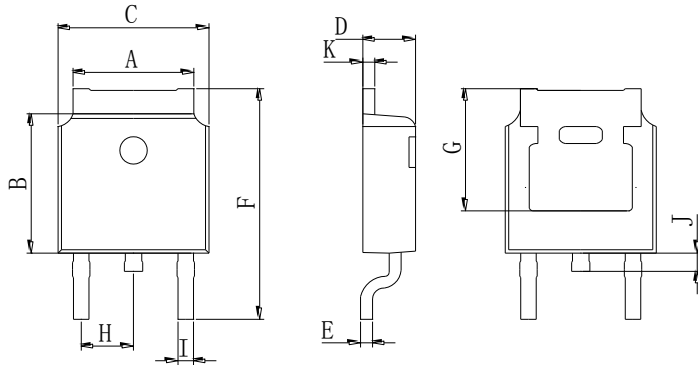


Fig. 7 Gate-Charge Characteristics

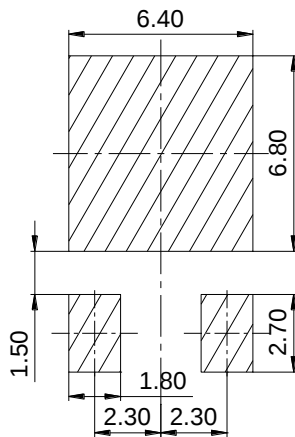
Package Outline Dimensions (Unit: mm)



TO-252		
Dimension	Min.	Max.
A	5.05	5.65
B	5.80	6.40
C	6.25	6.85
D	2.20	2.40
E	0.40	0.60
F	9.71	10.31
G	5.05	5.65
H	2.10	2.50
I	0.70	0.90
J	0.50	0.70
K	0.40	0.60

Mounting Pad Layout (Unit: mm)

TO-252



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