

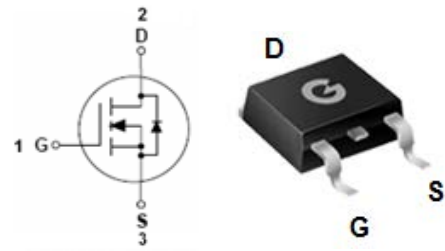
Features

- Fast switching speed
- Low gate charge
- Improved dv/dt capability

HF

Mechanical Data

- Case: TO-252
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matted-Tin plated; Solderable Per MIL-STD-202, Method 208



TO-252

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL2N50D	TO-252	80pcs / Tube or 2500pcs / Tape & Reel	2N50D

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V _{DSS}	500	V
Gate-to-Source Voltage	V _{GSS}	±30	V
Continuous Drain Current (T _C = 25°C)	I _D	2	A
Pulsed Drain Current *1	I _{DM}	8	A
Single Pulse Avalanche Energy *2	E _{AS}	20	mJ

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T _C = 25°C)	P _D	19	W
Thermal Resistance Junction-to-Case	R _{θJC}	6.6	°C/W
Operating Junction Temperature Range	T _J	-55 ~ +150	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
V_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	500	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 500V, V_{GS} = 0V$	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS} = \pm 30V, V_{DS} = 0V$	-	-	± 0.1	μA
On Characteristics ^{*3}						
$R_{DS(ON)}$	Static Drain-Source On-resistance	$V_{GS} = 10V, I_D = 1A$	-	5.4	6.5	Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	3	3.6	4	V
Dynamic Characteristics						
C_{ISS}	Input Capacitance	$V_{GS} = 0V$	-	137	-	pF
C_{OSS}	Output Capacitance	$V_{DS} = 25V$	-	25	-	
C_{RSS}	Reverse Transfer Capacitance	$f = 1.0MHz$	-	4	-	
Switching Characteristics						
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD} = 250V$ $R_G = 25\Omega$ $I_D = 2A$	-	33.5	-	ns
t_r	Turn-on Rise Time		-	5.5	-	
$t_{d(OFF)}$	Turn-Off Delay Time		-	44.5	-	
t_f	Turn-Off Fall Time		-	17	-	
Q_G	Total Gate-Charge	$V_{DD} = 400V$	-	14.7	-	nC
Q_{GS}	Gate to Source Charge	$I_D = 2A$	-	3.7	-	
Q_{GD}	Gate to Drain (Miller) Charge	$V_{GS} = 10V$	-	8.7	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage	$I_{SD} = 1A, V_{GS} = 0V$	-	-	1.4	V
I_S	Diode Continuous Forward Current	$T_C = 25^\circ\text{C}$	-	-	2	A
I_{SM}	Pulsed Diode Forward Current		-	-	8	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. $L = 10mH, V_{DD} = 100V, R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$
3. Pulse Test: Pulse width $\leq 300\mu s$, Duty Cycle $\leq 1\%$

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

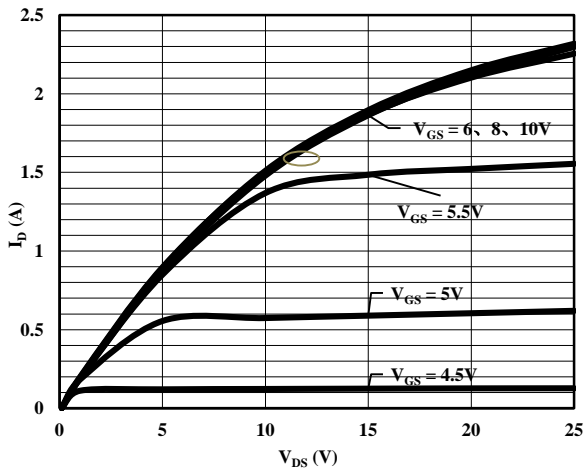


Fig 1 On-Region Characteristics

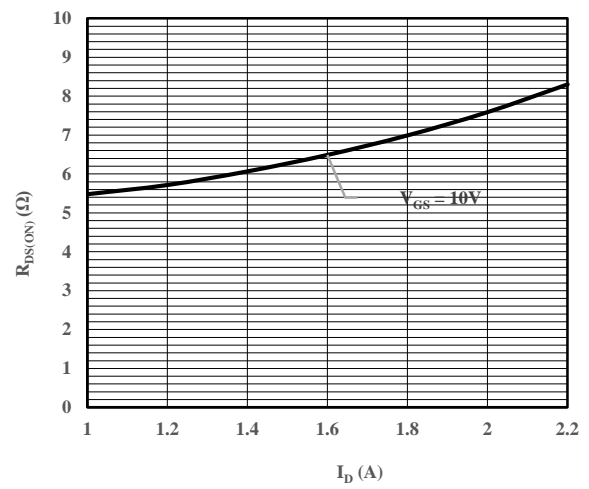


Fig 2 On-Resistance vs. Drain Current and Gate Voltage

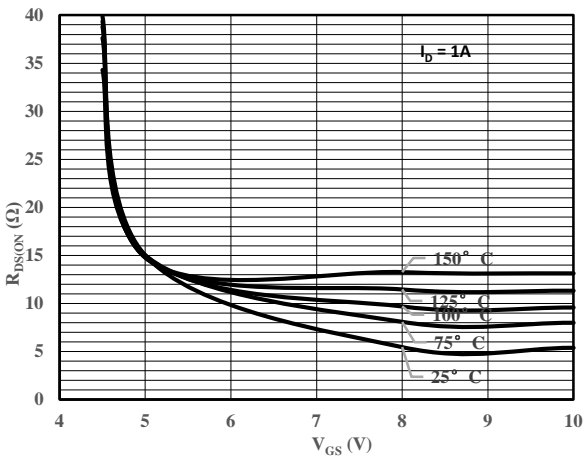


Fig 3 On-Resistance vs. Gate-Source Voltage

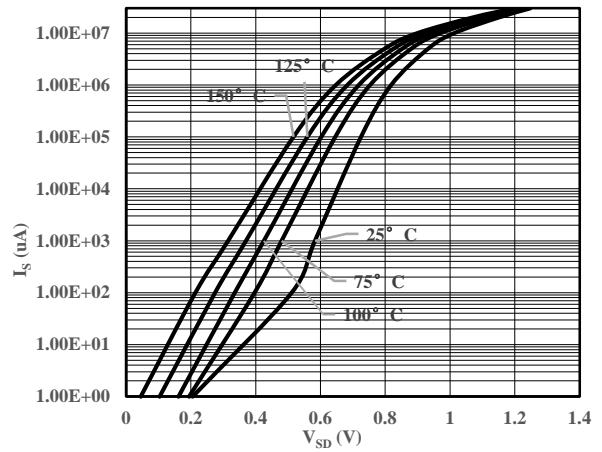


Fig 4 Body-Diode Characteristics

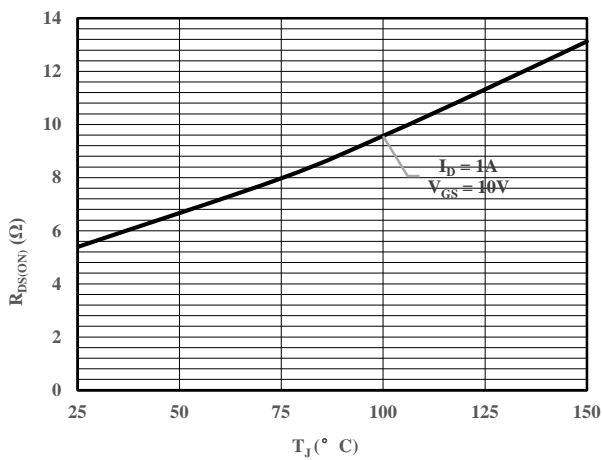


Fig 5 On-Resistance vs. Junction Temperature

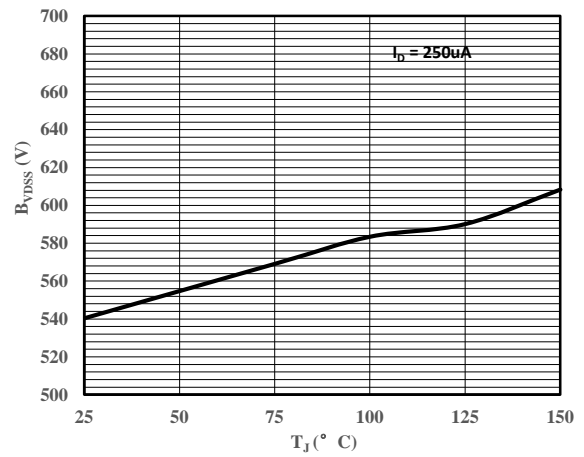


Fig 6 Drain-Source vs. Junction Temperature

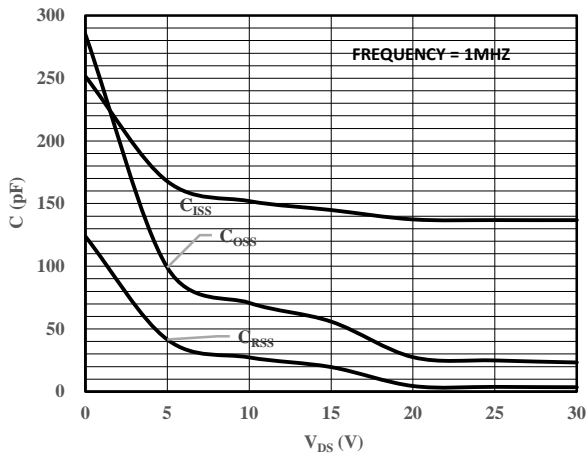


Fig 7 Capacitance Characteristics

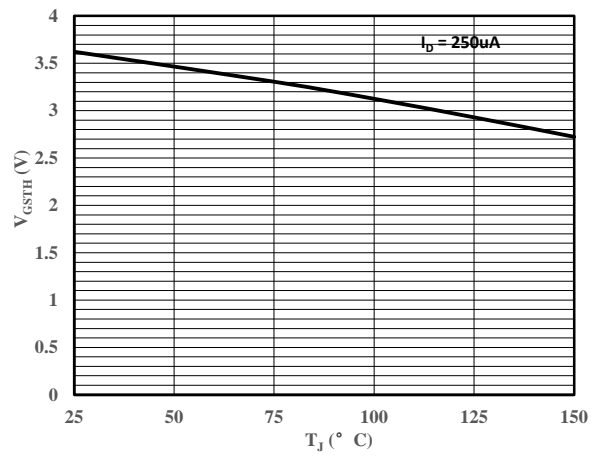


Fig 8 Gate Voltage vs. Junction Temperature

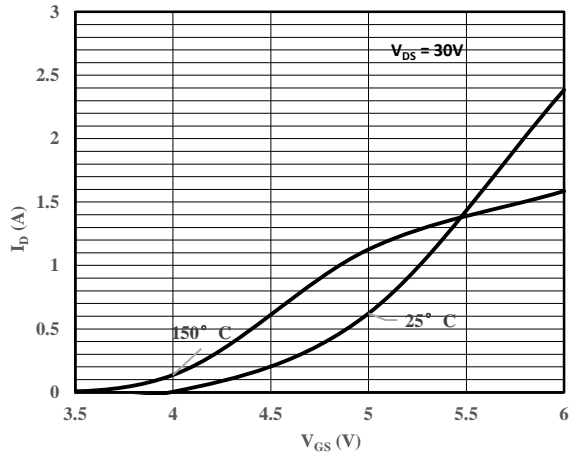


Fig 9 Transfer Characteristics

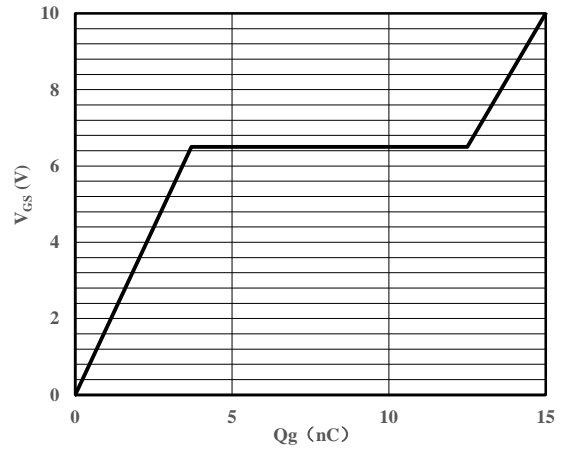
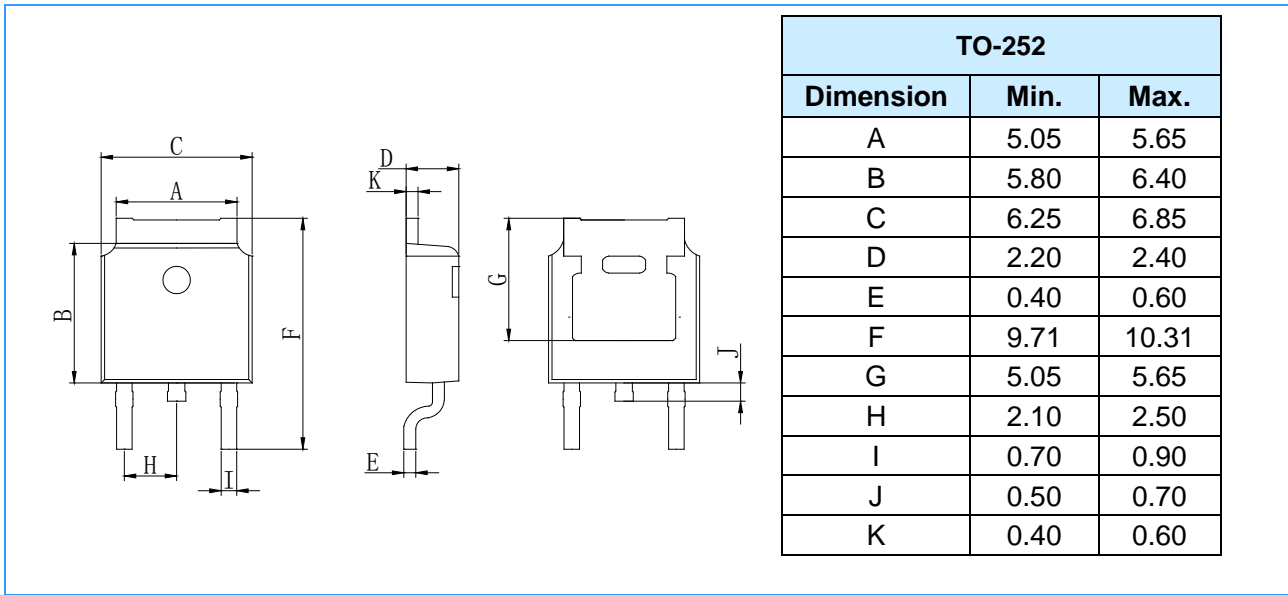
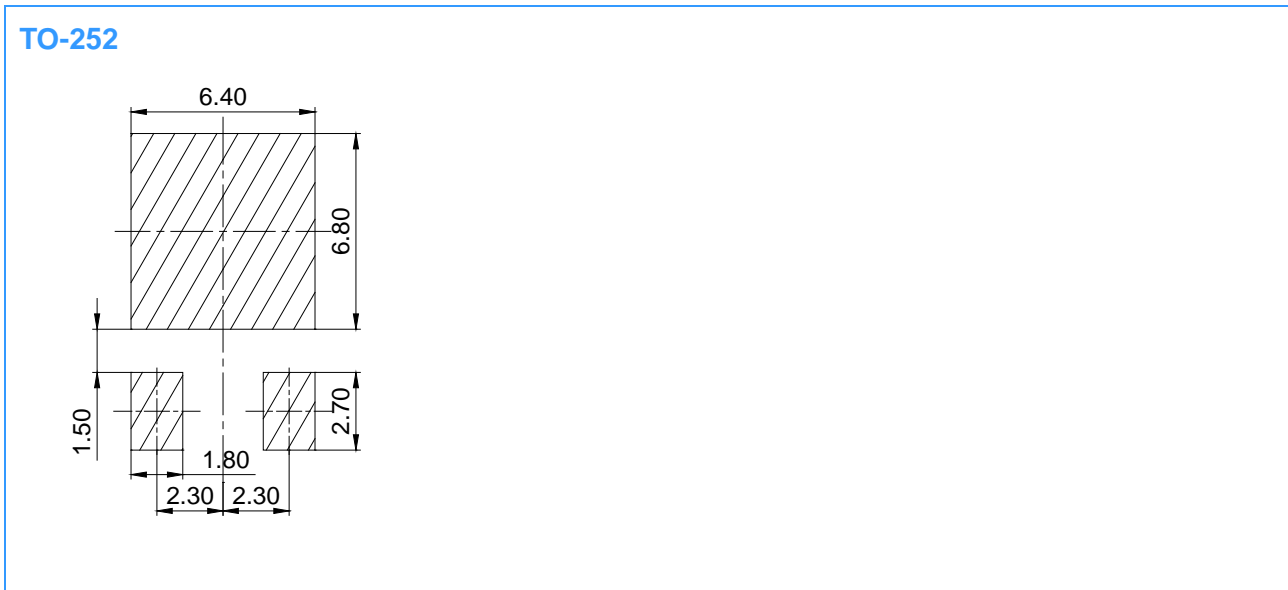


Fig 10 Gate-Charge Characteristics

Package Outline Dimensions (Unit: mm)



Mounting Pad Layout (Unit: mm)



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