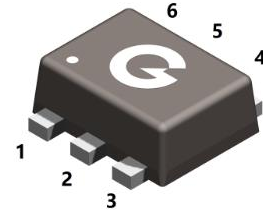
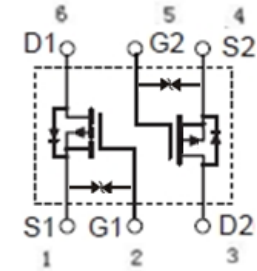


Features

- Advanced trench technology
- Low On-Resistance
- Low gate threshold voltage
- Low input capacitance
- Fast switching speed
- HBM: JESD22-A114-B: 2
- RoHS compliant with Halogen-free

HF



SOT-563

Mechanical Data

- Case: SOT-563
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL1013V	SOT-563	3000 pcs / Tape & Reel	PA1

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

Parameter	Symbol	Value	Unit
Drain-to-Source Voltage	V_{DS}	-20	V
Gate-to-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current ($T_A = 25^\circ\text{C}$) ^{*1}	I_D	-0.78	A
Continuous Drain Current ($T_A = 70^\circ\text{C}$) ^{*1}		-0.62	A
Pulsed Drain Current ($t_p = 10\mu\text{s}$, $T_A = 25^\circ\text{C}$)	I_{DM}	-4.9	A
Single Pulse Avalanche Energy ^{*3}	E_{AS}	0.5	mJ
Power Dissipation ($T_A = 25^\circ\text{C}$) ^{*1}	P_D	0.25	W
Operating Junction Temperature Range	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	-	-	342	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Air ^{*1}	$R_{\theta JA}$	-	-	500	$^\circ\text{C/W}$

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	-20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -20V, V _{GS} = 0V	-	-	-1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±4.5V, V _{DS} = 0V	-	-	±10	μA
On Characteristics						
R _{DS(ON)}	Drain-Source On-resistance *2	V _{GS} = -4.5V, I _D = -780mA	-	0.4	0.48	Ω
		V _{GS} = -2.5V, I _D = -660mA	-	0.6	0.67	
		V _{GS} = -1.8V, I _D = -100mA	-	0.75	2.2	
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = -250uA	-0.45	-0.6	-1.2	V
R _G	Gate Resistance	V _{GS} = 0V, f = 1MHz	-	94	-	Ω
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = -16V f = 1.0MHz	-	76	-	pF
C _{OSS}	Output Capacitance		-	13	-	
C _{RSS}	Reverse Transfer Capacitance		-	10	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time *4	V _{DD} = -10V V _{GS} = -4.5V R _G = 3Ω R _G = 50Ω	-	8	-	ns
t _r	Turn-on Rise Time *4		-	5.5	-	
t _{d(OFF)}	Turn-Off Delay Time *4		-	30	-	
t _f	Turn-Off Fall Time *4		-	17	-	
Q _G	Total Gate-Charge	V _{DS} = -16V V _{GS} = -4.5V I _D = -0.2A	-	2.6	-	nC
Q _{GS}	Gate to Source Charge		-	0.57	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	0.34	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage *2	I _S = -0.35A, V _{GS} = 0 V	-	-0.8	-1.2	V

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The E_{AS} data shows Max. rating. The test condition is $V_{DD} = -15V, V_{GS} = -5V, L = 0.1mH$
4. Guaranteed by design, not subject to production

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

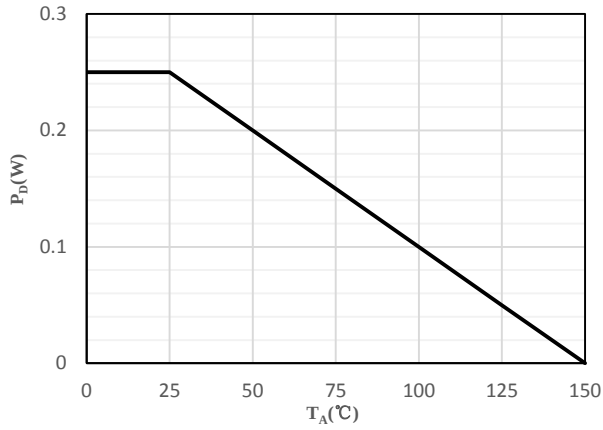


Fig 1 Power Dissipation

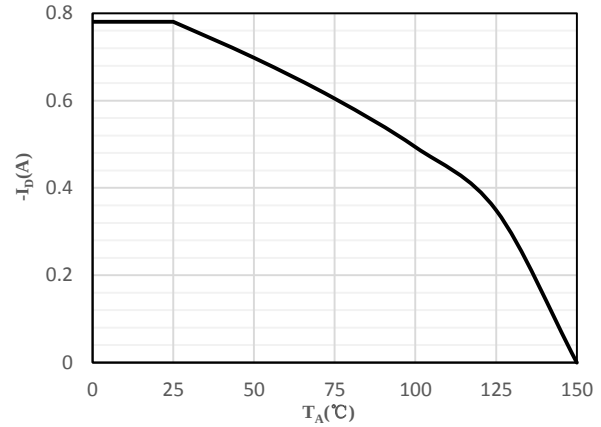


Fig 2 Drain Current

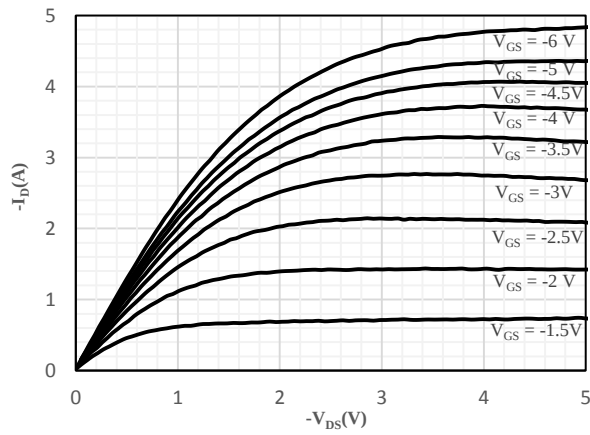


Fig 3 Typical Output Characteristics

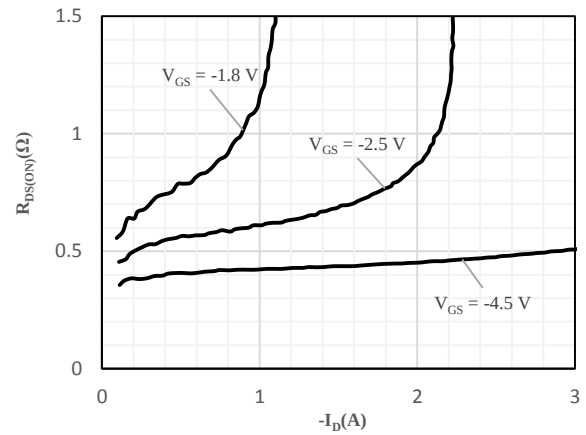


Fig 4 On-Resistance vs. Drain Current
and Gate Voltage

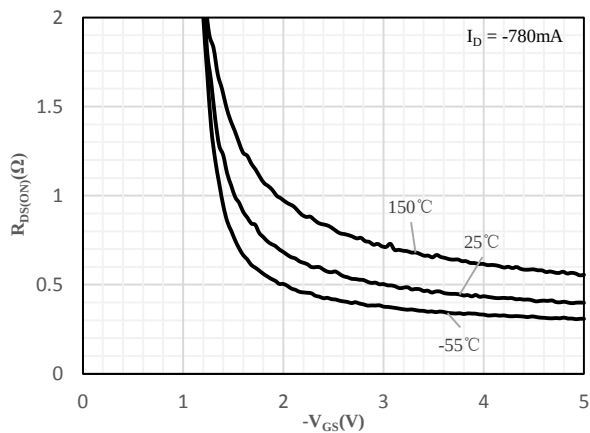


Fig 5 On-Resistance vs. Gate-Source Voltage

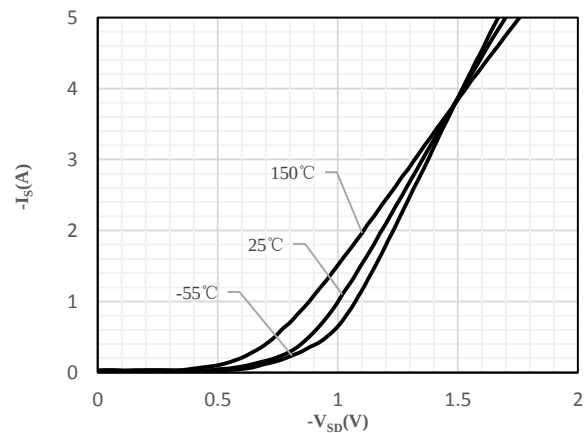


Fig 6 Body-Diode Characteristics

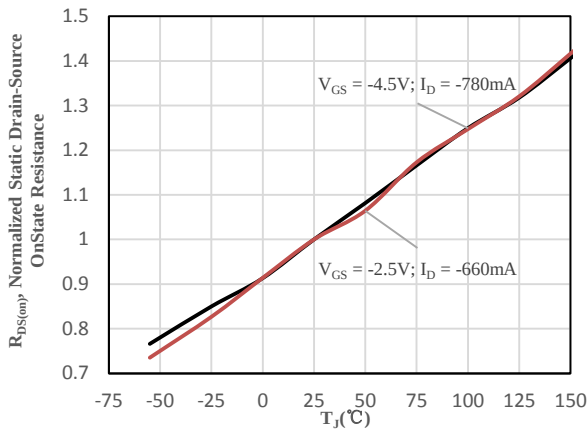


Fig 7 Normalized On-Resistance vs. Junction Temperature

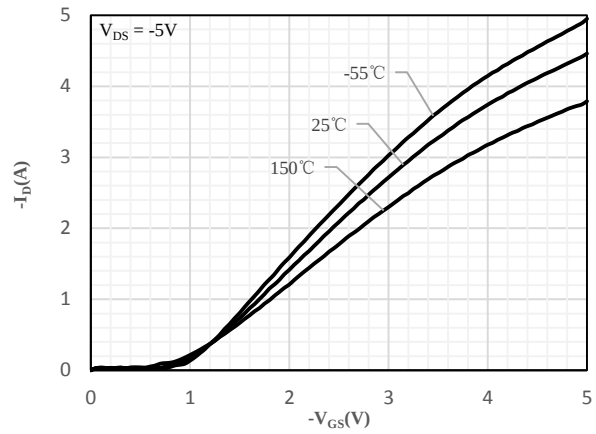


Fig 8 Transfer Characteristics

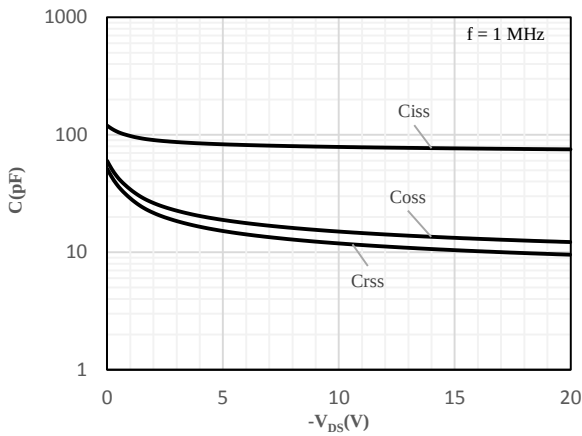


Fig 9 Capacitance Characteristics

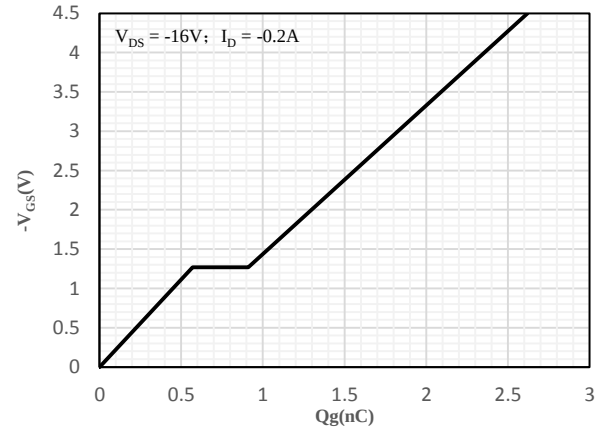


Fig 10 Gate-Charge Characteristics

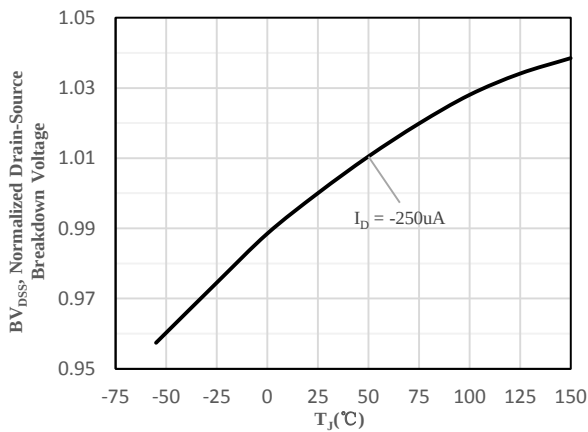


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

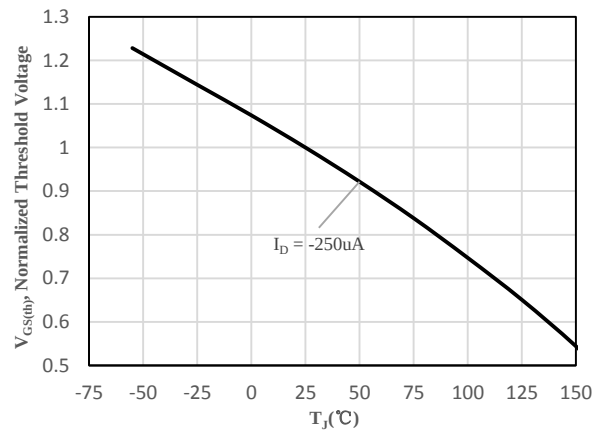
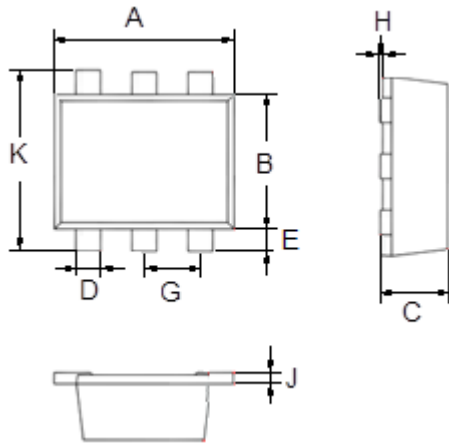


Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature

Package Outline Dimensions (Unit: mm)



SOT-563		
Dimension	Min.	Max.
A	1.500	1.700
B	1.100	1.300
C	0.525	0.600
D	0.170	0.270
E	0.100	0.300
G	0.450	0.550
H	0.000	0.050
J	0.090	0.160
K	1.500	1.700

Mounting Pad Layout (Unit: mm)

SOT-563

