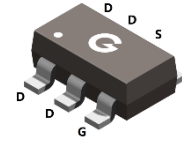
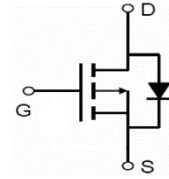


Features

- High-speed switching
- Drive circuits can be simple
- Parallel use is easy
- HBM: JESD22-A114-B: 1A
- RoHS compliant with Halogen-free

HF



SOT-23-6L

Mechanical Data

- Case: SOT-23-6L
- 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
BL3415-6L	SOT-23-6L	3000 pcs / Tape & Reel	3415

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	-4.6	A
Continuous Drain Current ($T_A = 70^\circ\text{C}$) *1		-3.7	
Pulsed Drain Current ($t_p = 10\mu\text{s}$, $T_A = 25^\circ\text{C}$)	I_{DM}	-30	A
Single Pulse Avalanche Energy *4	E_{AS}	5.5	mJ
Power Dissipation ($T_A = 25^\circ\text{C}$) *1	P_D	1.4	W
Power Dissipation ($T_A = 25^\circ\text{C}$) *2		0.35	
Operating Junction Temperature Range	T_J	$-55 \sim +150$	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	-	70	90	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Air *2		-	-	357	$^\circ\text{C/W}$

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} = ±12V, V _{DS} = 0V	-	-	±100	nA
On Characteristics						
R _{DS(ON)}	Drain-Source On-resistance*3	V _{GS} = -4.5V, I _D = -4A	-	32	50	mΩ
		V _{GS} = -2.5V, I _D = -4A	-	43	70	
		V _{GS} = -1.8V, I _D = -1A	-	78	105	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = -250μA	-0.3	-0.75	-1	V
R _G	Gate Resistance	V _{GS} = 0V, f = 1MHz	-	29	-	Ω
Dynamic Characteristics						
C _{ISS}	Input Capacitance	V _{GS} = 0V V _{DS} = -10V f = 1.0MHz	-	977	-	pF
C _{OSS}	Output Capacitance		-	109	-	
C _{RSS}	Reverse Transfer Capacitance		-	92	-	
Switching Characteristics						
t _{d(ON)}	Turn-on Delay Time *5	V _{DD} = -10V V _{GS} = -4.5V R _G = 3Ω R _L = 2.5Ω	-	9.5	-	ns
t _r	Turn-on Rise Time *5		-	17	-	
t _{d(OFF)}	Turn-Off Delay Time *5		-	94	-	
t _f	Turn-Off Fall Time *5		-	35	-	
Q _G	Total Gate-Charge	V _{DD} = -10V V _{GS} = -4.5V I _D = -4A	-	10	-	nC
Q _{GS}	Gate to Source Charge		-	2.3	-	
Q _{GD}	Gate to Drain (Miller) Charge		-	2	-	
Source-Drain Diode Characteristics						
V _{SD}	Diode Forward Voltage*3	I _{SD} = -1A, V _{GS} = 0V	-	-0.7	-1	V

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper
2. The data tested by surface mounted on a minimum recommended FR-4 board
3. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
4. The E_{AS} data shows Max. rating. The test condition is $V_{DD} = -10V, V_{GS} = -6V, L = 0.1mH$
5. Guaranteed by design, not subject to production

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

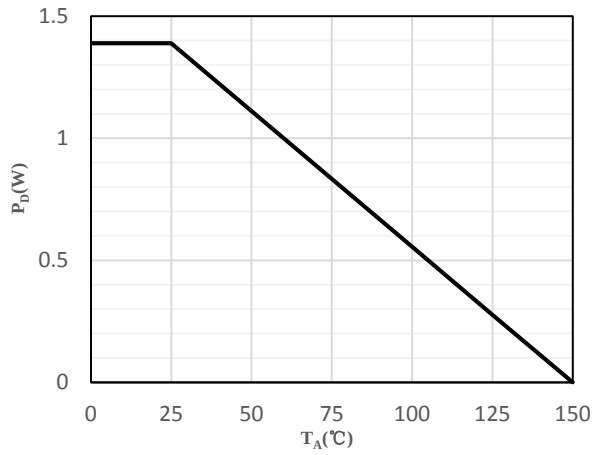


Fig 1 Power Dissipation

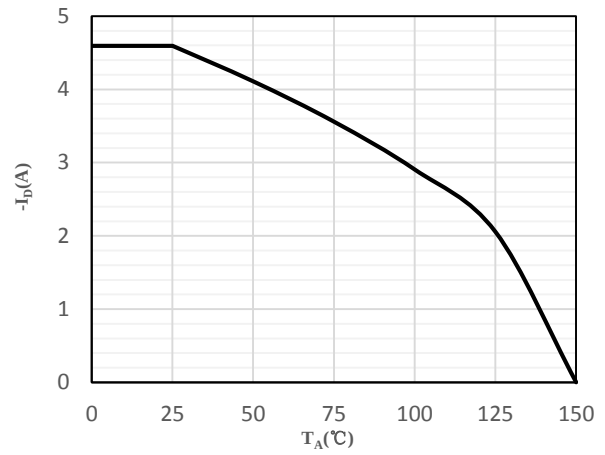


Fig 2 Drain Current

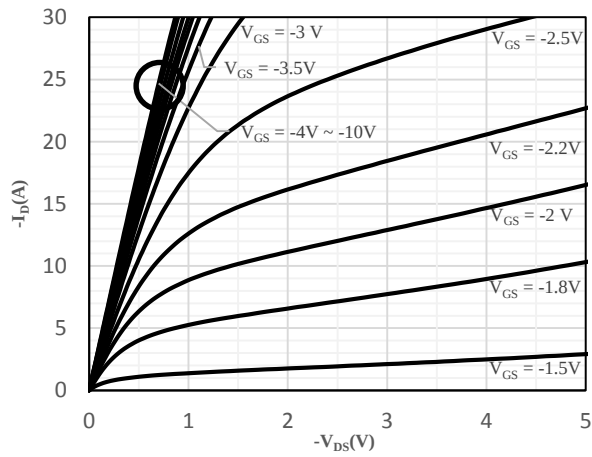


Fig 3 Typical Output Characteristics

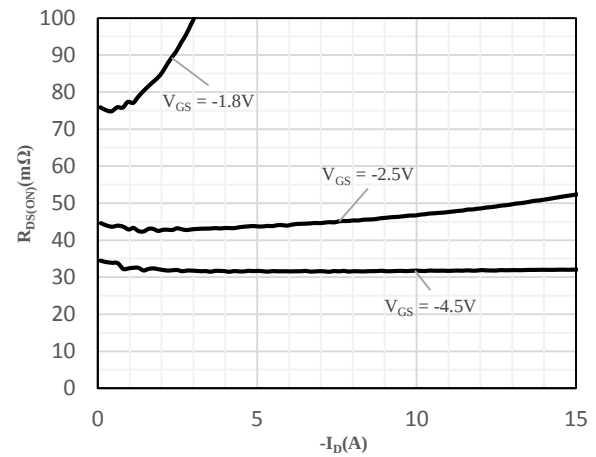


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

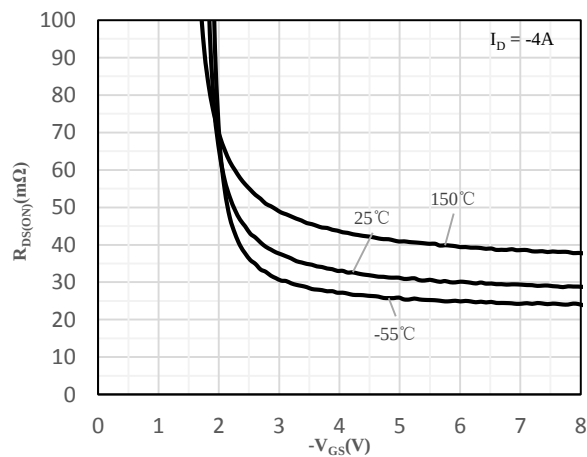


Fig 5 On-Resistance vs. Gate-Source Voltage

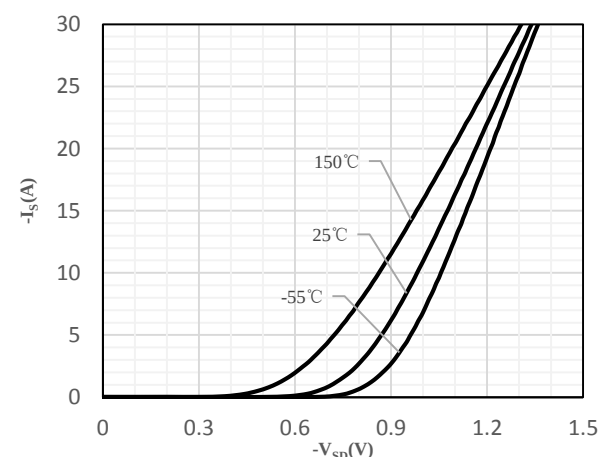


Fig 6 Body-Diode Characteristics

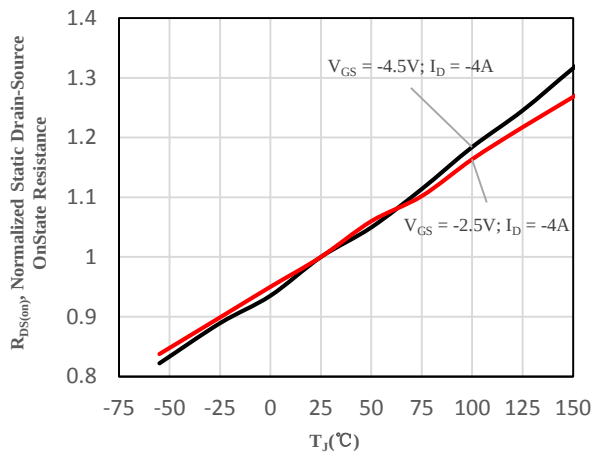


Fig 7 Normalized On-Resistance vs. Junction Temperature

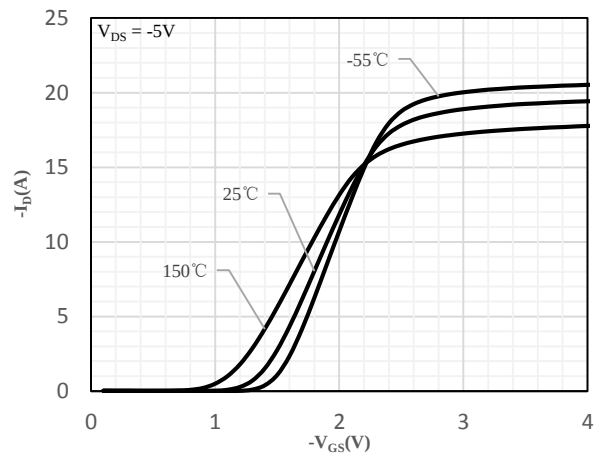


Fig 8 Transfer Characteristics

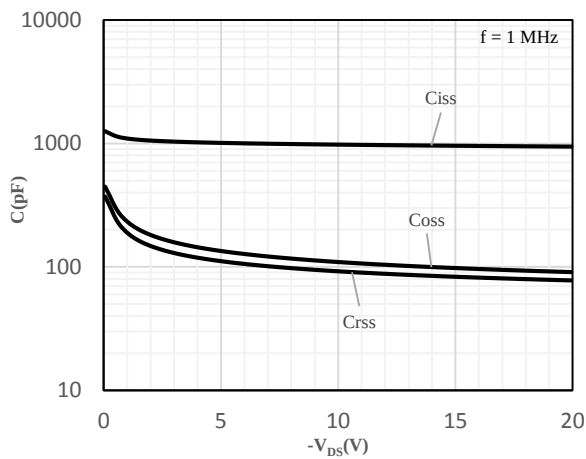


Fig 9 Capacitance Characteristics

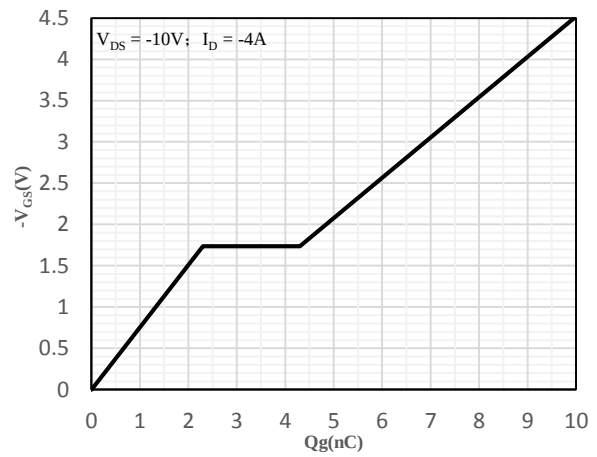


Fig 10 Gate-Charge Characteristics

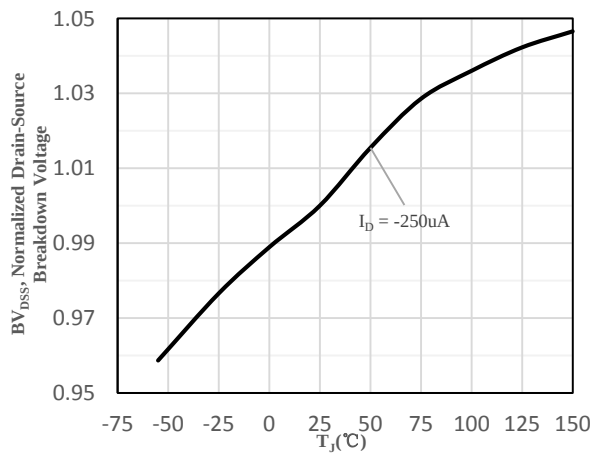


Fig 11 Normalized Breakdown Voltage vs. Junction Temperature

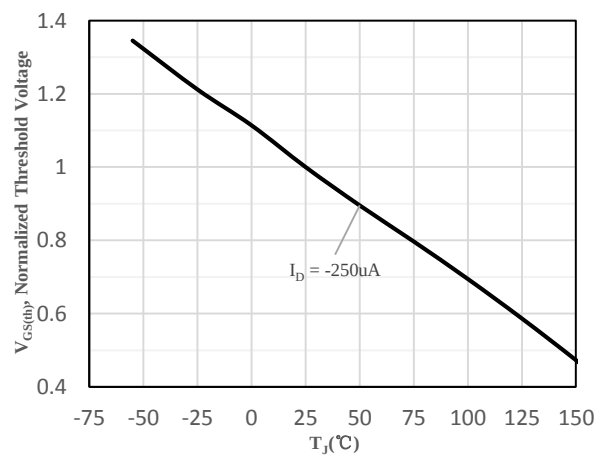
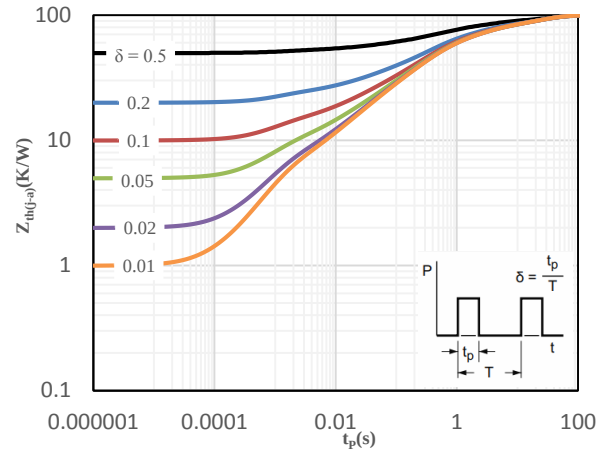
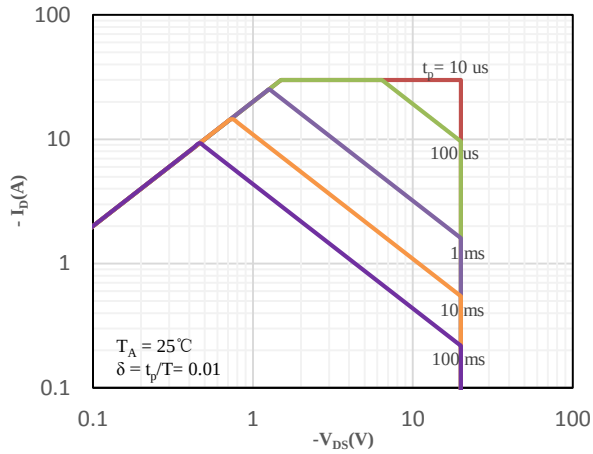
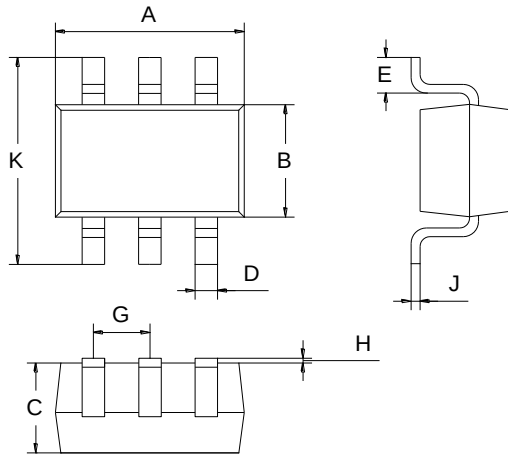


Fig 12 Normalized $V_{GS(th)}$ vs. Junction Temperature



Package Outline Dimensions (Unit: mm)



SOT-23-6L		
Dimension	Min.	Max.
A	2.80	3.00
B	1.50	1.70
C	1.00	1.20
D	0.35	0.45
E	0.35	0.55
G	0.90	1.00
H	0.02	0.10
J	0.10	0.20
K	2.60	3.00

Mounting Pad Layout (Unit: mm)

SOT-23-6L

