COMPLEMENTARY PAIR ENHANCEMENT MODE

BL6601-6L

Features

- Complementary MOSFET.
- Low On-Resistance.
- Low Input Capacitance.
- Fast Switching Speed.

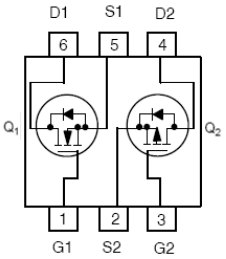
HF

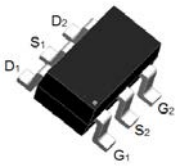
Typical Applications

- Backlighting.
- Power Management Functions.
- DC-DC Converters

Mechanical Data

- Case: SOT-23-6L.
- Molding Compound, UL Flammability Classification Rating 94V-0.
- Terminals: Matte Tin Plated Leads, Solderable Per MIL-STD-202, Method 208.





BL6601-6L

SOT-23-6L

Ordering Information

Part Number	Package	Shipping	Marking Code
BL6601-6L	SOT-23-6L	3000pcs / Tape & Reel	6601

Maximum Ratings (@T_A=25℃ unless otherwise specified)

Symbol	Parameter	Q1	Q2	Units
V_{DSS}	Drain-Source Voltage	30	-30	V
V_{GSS}	Gate -Source Voltage	±12	±12	V
I_D	Continuous Drain Current	3.8	-2.5	A
I_{DM}	Pulsed Drain Current	20	-15	A
P_D	Power Dissipation	0.85	1.3	W
$R_{\Theta JA}$	Junction-to-Air	147	96	℃/W
$R_{\Theta JC}$	Junction-to-Case	36		℃/W
T_J	Junction Temperature	150		℃
T_{STG}	Storage Temperature Range	-55 to +150		℃

Electrical Characteristics-Q2 (@T_A=25℃ unless otherwise specified)

Symbol	Parameter	Test conditions	MIN	TYP	MAX	UNIT
OFF Characteristics						
V_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=-250μA	-30	-	-	V
I_{DSS}	Drain to Source Leakage Current	V_{DS}=-30V, V_{GS}=0V	-	-	-1	uA
I_{GSS}	Gate-body Leakage	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
ON Characteristics(NOTE2)						
$R_{DS(ON)}$	Static Drain-Source On-resistance	V_{GS}=-2.5V, I_D=-1A	-	-	190	mΩ
		V_{GS}=-4.5V, I_D=-2A	-	-	142	
		V_{GS}=-10V, I_D=-2.3A	-	-	110	
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=-250uA	-0.4	-1	-1.2	V
Dynamic Characteristics(NOTE3)						
Ciss	Input Capacitance	V_{GS} = 0V	-	541	-	pF
Coss	Output Capacitance	V_{DS} = -15V	-	46	-	
Crss	Reverse Transfer Capacitance	f = 1.0MHz	-	43	-	
Switching Characteristics(NOTE3)						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=-15V, R_L=6Ω V_{GS}=-10V,R_G=3Ω	-	1.7	-	nS
t_r	Turn-on Rise Time		-	4.6	-	
$t_{d(off)}$	Turn-Off Delay Time		-	18.3	-	
t_f	Turn-Off Fall Time		-	2.2	-	
Q_g	Total Gate Charge	V_{DS}=-15V, I_D=-2.3A V_{GS}=-10V	-	13.8	-	nC
Q_{gs}	Gate-Source Charge		-	1	-	
Q_{gd}	Gate-Drain Charge		-	1.6	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage(NOTE1)	I_{SD}=-1A,V_{GS}=0V	-	-0.8	-1.0	V
I_S	Diode Continuous Forward Current	T_C=25℃	-	-	-1	A

Electrical Characteristics-Q1 (@T_A=25℃ unless otherwise specified)

Symbol	Parameter	Test conditions	MIN	TYP	MAX	UNIT
OFF Characteristics						
V_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250μA	30	-	-	V
I_{DSS}	Drain to Source Leakage Current	V_{DS}=30V, V_{GS}=0V	-	-	1	uA
I_{GSS}	Gate-body Leakage	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
ON Characteristics(NOTE2)						
$R_{DS(ON)}$	Static Drain-Source On-resistance	V_{GS}=2.5V, I_D=2A	-	-	85	mΩ
		V_{GS}=4.5V, I_D=3A	-	-	65	
		V_{GS}=10V, I_D=3.4A	-	-	55	
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250uA	0.5	1	1.5	V
Dynamic Characteristics(NOTE3)						
Ciss	Input Capacitance	V_{GS} = 0V	-	422	-	pF
Coss	Output Capacitance	V_{DS} =15V	-	41	-	
Crss	Reverse Transfer Capacitance	f = 1.0MHz	-	39	-	
Switching Characteristics(NOTE3)						
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=15V, R_L=4.7Ω V_{GS}=10V,R_G=3Ω	-	1.6	-	nS
t_r	Turn-on Rise Time		-	7.4	-	
$t_{d(off)}$	Turn-Off Delay Time		-	31.2	-	
t_f	Turn-Off Fall Time		-	15.6	-	
Q_g	Total Gate Charge	V_{DS}=15V, I_D=3.1A V_{GS}=10V	-	12.3	-	nC
Q_{gs}	Gate-Source Charge		-	0.8	-	
Q_{gd}	Gate-Drain Charge		-	1.2	-	
Source-Drain Diode Characteristics						
V_{SD}	Diode Forward Voltage(NOTE1)	I_{SD}=1A,V_{GS}=0V	-	0.75	1	V
I_S	Diode Continuous Forward Current	T_C=25℃	-	-	1	A

NOTE:

1、 Surface Mounted on FR4 Board, t ≤ 10 sec

2、 Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

3、 Guaranteed by design, not subject to production.

Ratings and Characteristic Curves-Q1 (T_A=25℃ unless otherwise noted)

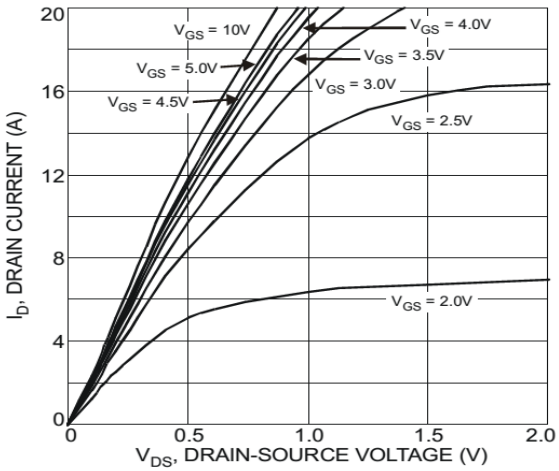


Fig. 1 Typical Output Characteristic

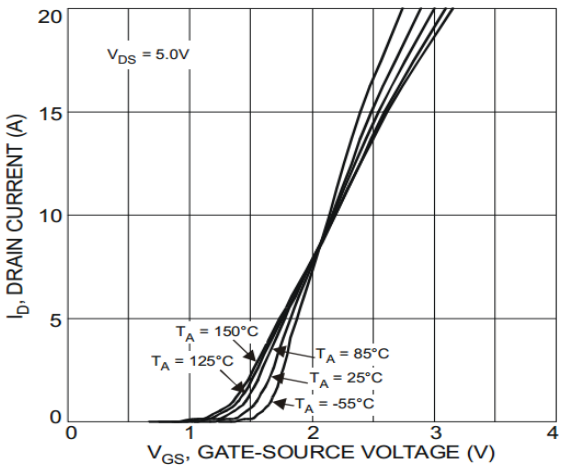


Fig. 2 Typical Transfer Characteristics

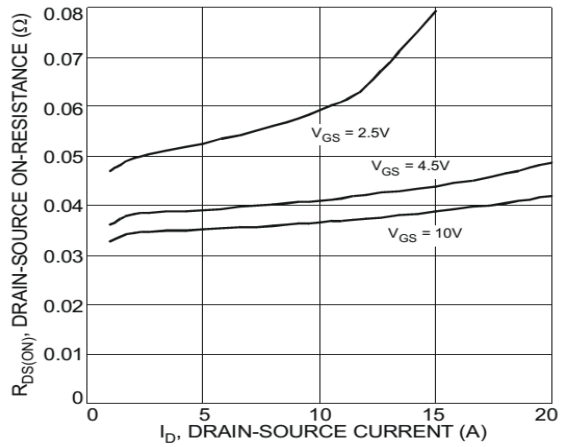


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

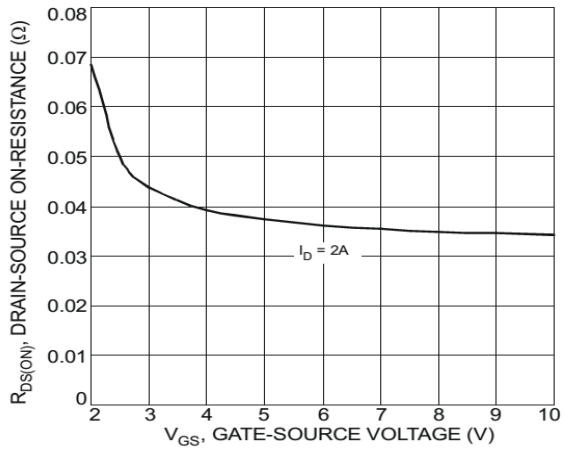


Fig. 4 Typical Drain-Source On-Resistance vs. Gate-Source Voltage

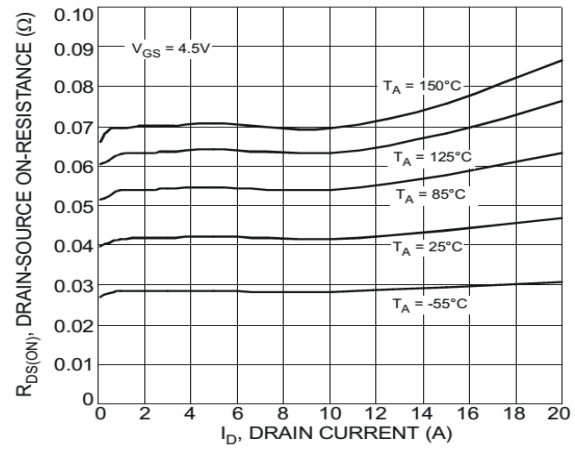


Fig. 5 Typical On-Resistance vs. Drain Current and Temperature

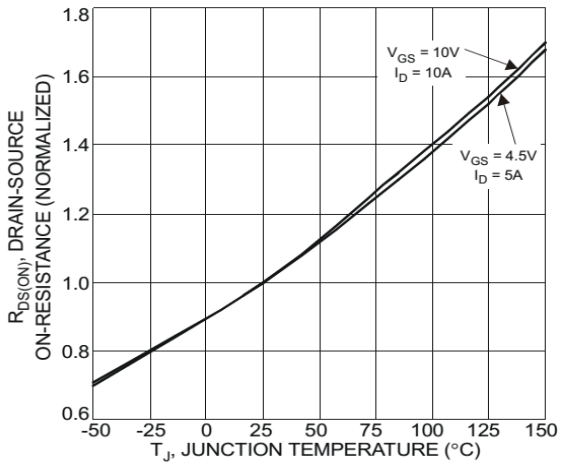


Fig. 6 On-Resistance Variation with Temperature

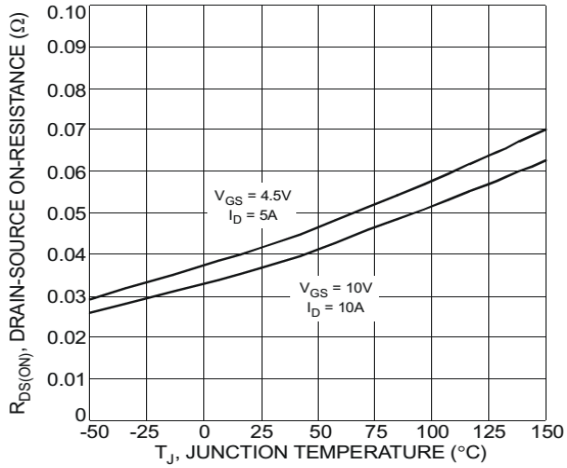


Fig. 7 On-Resistance Variation with Temperature

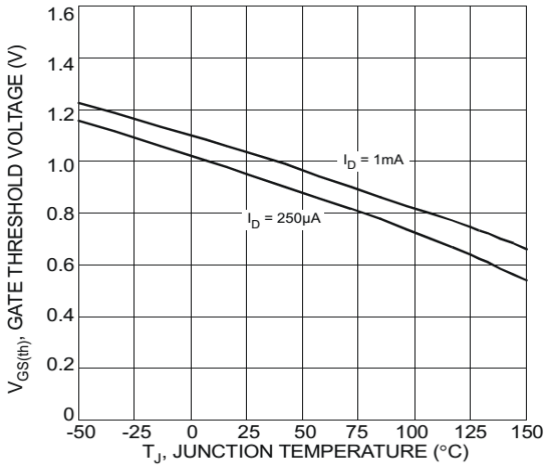


Fig. 8 Gate Threshold Variation vs. Ambient Temperature

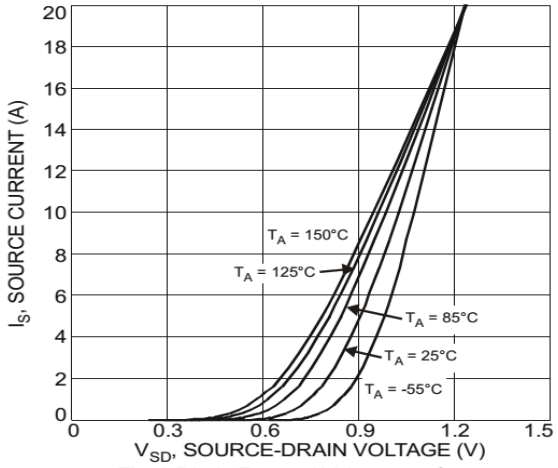


Fig. 9 Diode Forward Voltage vs. Current

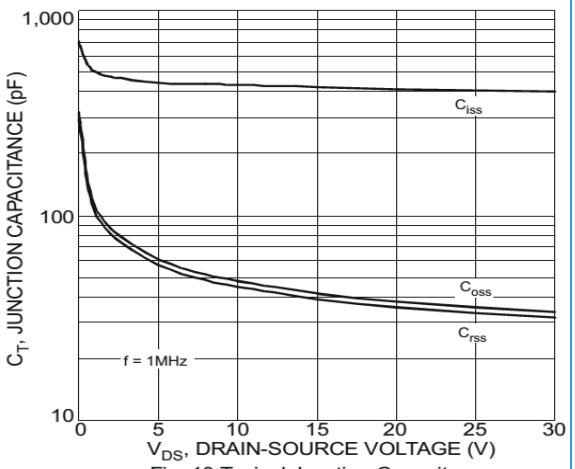


Fig. 10 Typical Junction Capacitance

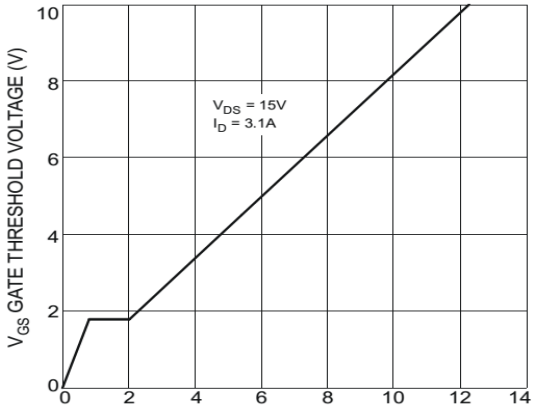


Fig. 11 Gate Charge

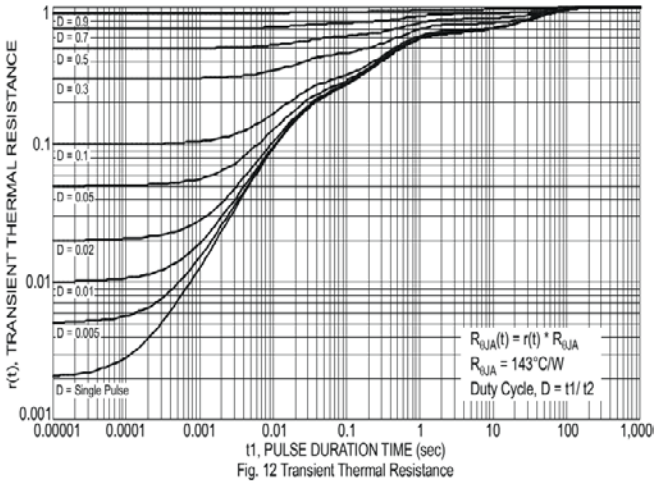


Fig. 12 Transient Thermal Resistance

Ratings and Characteristic Curves-Q2 (T_A=25℃ unless otherwise noted)

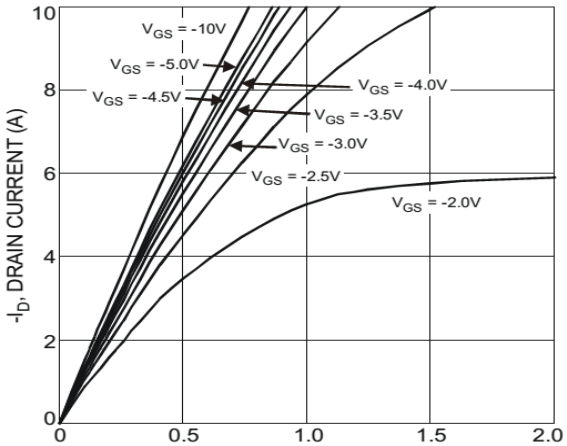


Fig. 13 Typical Output Characteristics

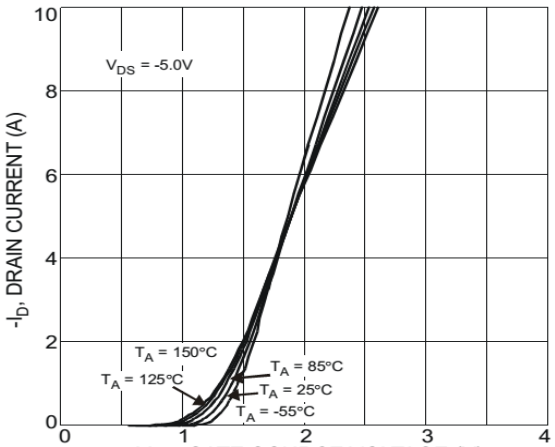


Fig. 14 Typical Transfer Characteristics

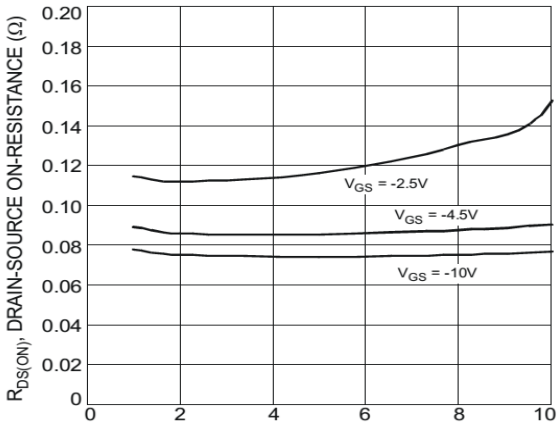


Fig. 15 Typical On-Resistance vs. Drain Current and Gate Voltage

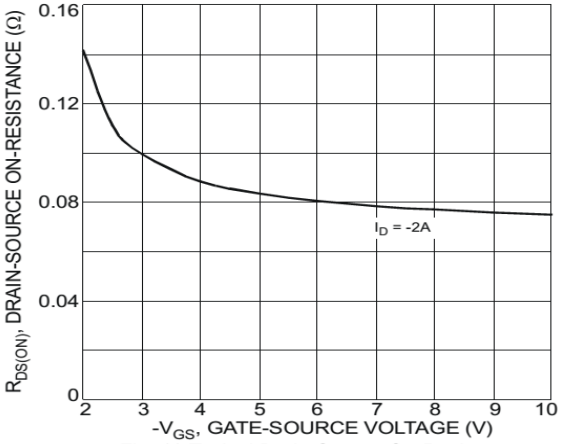


Fig. 16 Typical Drain-Source On-Resistance vs. Gate-Source Voltage

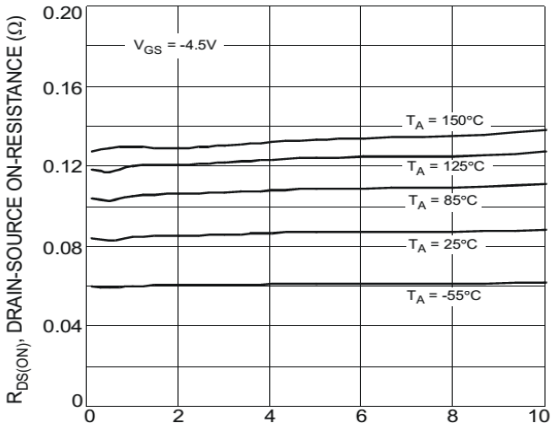


Fig. 17 Typical On-Resistance vs. Drain Current and Temperature

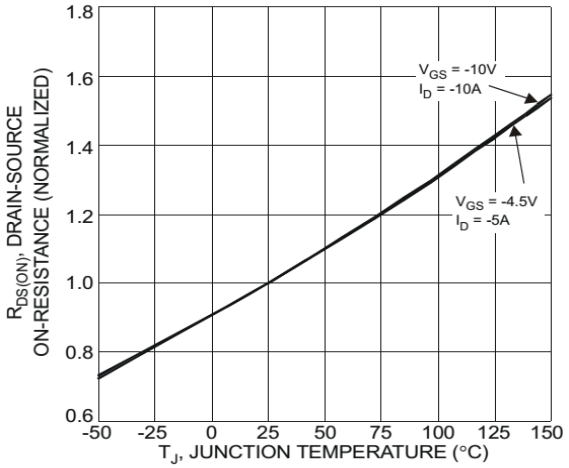


Fig. 18 On-Resistance Variation with Temperature

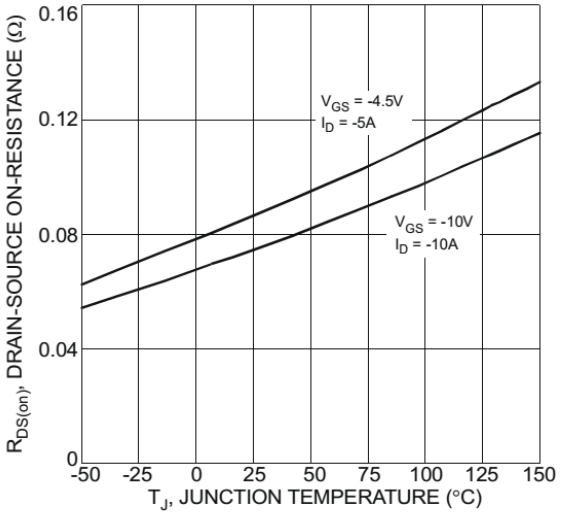


Fig. 19 On-Resistance Variation with Temperature

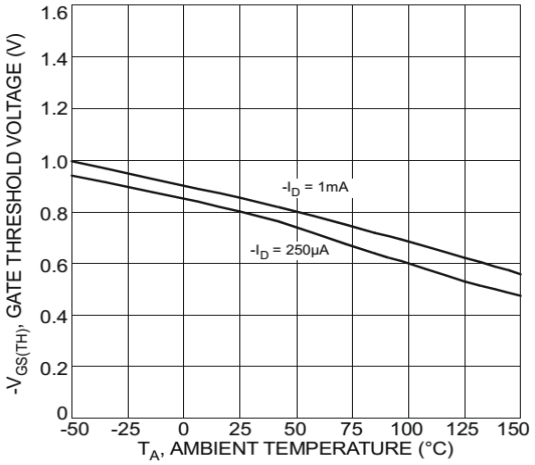


Fig. 20 Gate Threshold Variation vs. Ambient Temperature

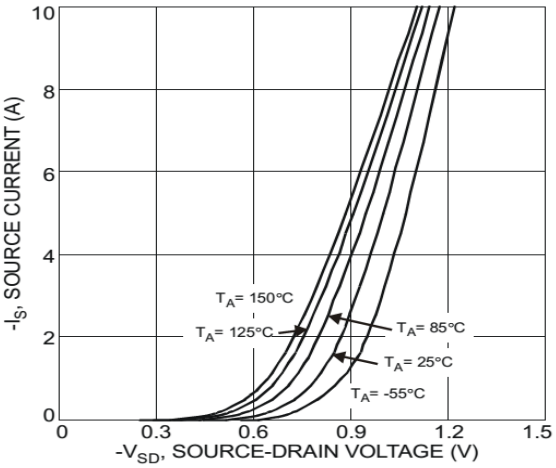


Fig. 21 Diode Forward Voltage vs. Current

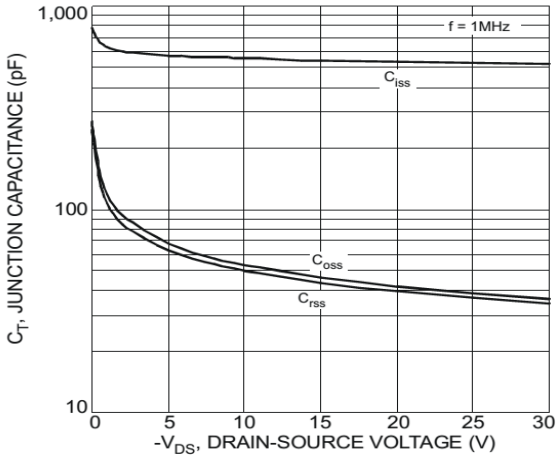


Fig. 22 Typical Junction Capacitance

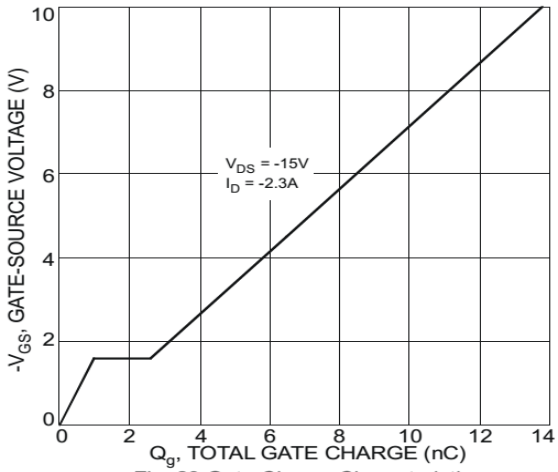
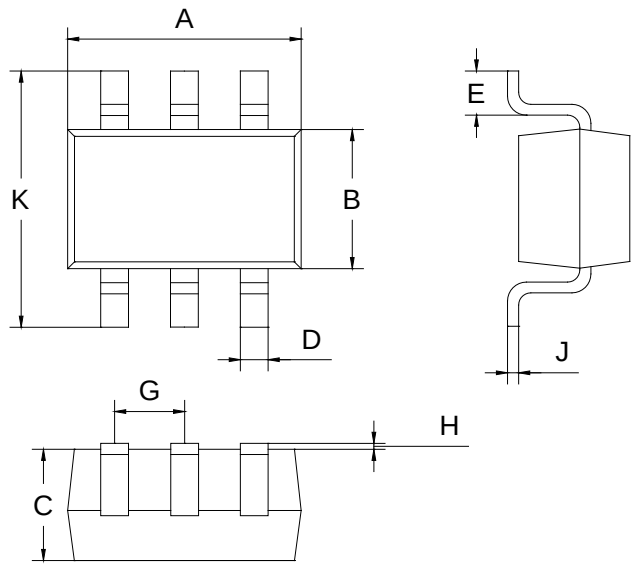


Fig. 23 Gate-Charge Characteristics

Package Outline Dimensions(unit:mm)

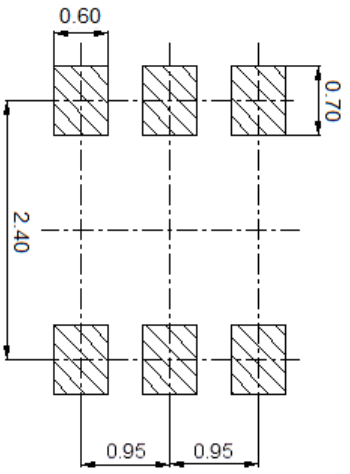
SOT-23-6L



SOT-23-6L		
Dim	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



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