

Features

- Complementary MOSFET
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Halogen free
- Qualified to AEC-Q101 standards for high reliability

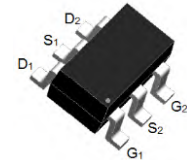
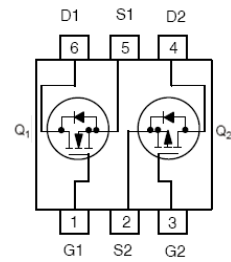
HF

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



SOT-23-6L

Ordering Information

Part Number	Package	Shipping	Marking Code
TBL6601-6L	SOT-23-6L	3000 pcs / Tape & Reel	6601

Maximum Ratings (@T_A=25°C 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 _{θJA}	Junction-to-Air	147	96	°C/W
R _{θJC}	Junction-to-Case	36		°C/W
T _J	Junction Temperature	-55 to +150		°C
T _{STG}	Storage Temperature Range	-55 to +150		°C

Electrical Characteristics-Q2 (@T_A=25°C 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)						
C _{iss}	Input Capacitance	V _{GS} = 0V	-	541	-	pF
C _{oss}	Output Capacitance	V _{DS} = -15V	-	46	-	
C _{rss}	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°C	-	-	-1	A

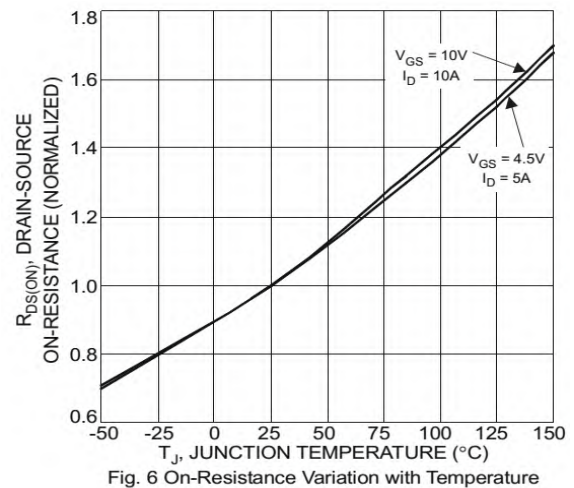
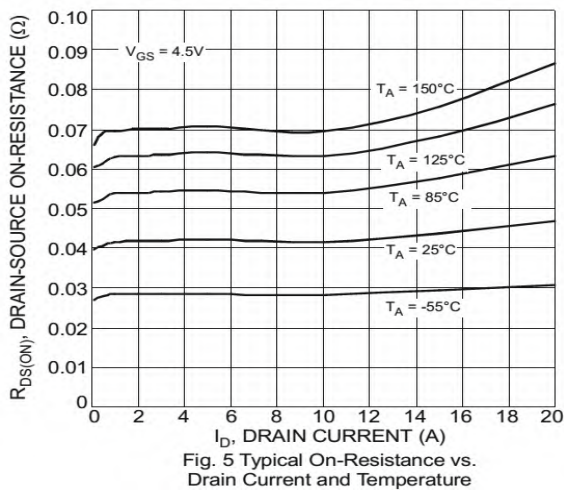
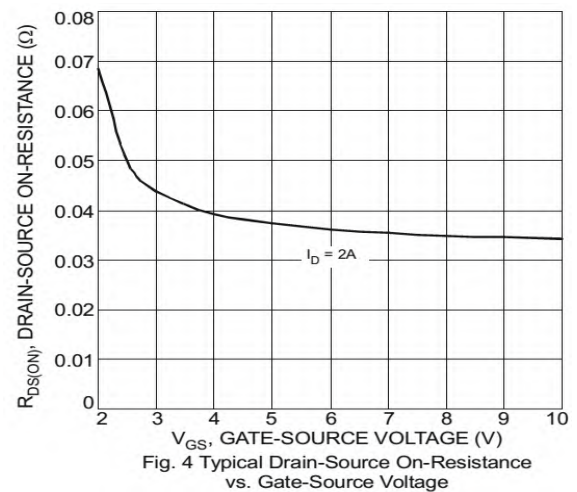
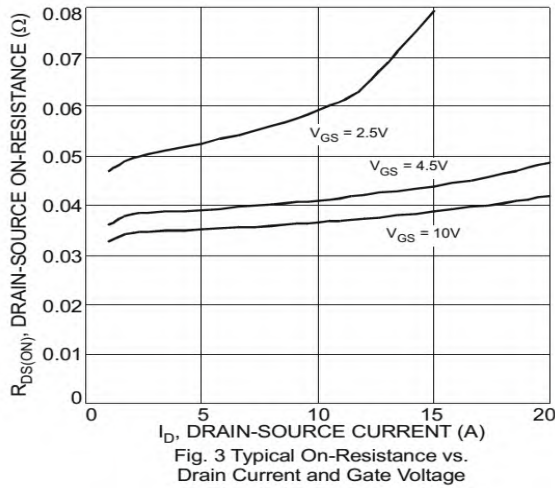
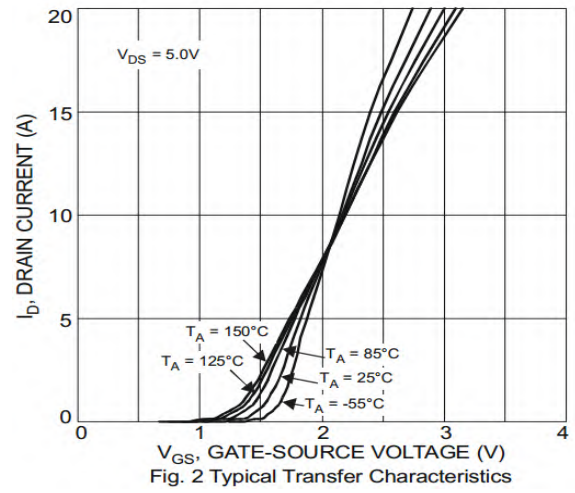
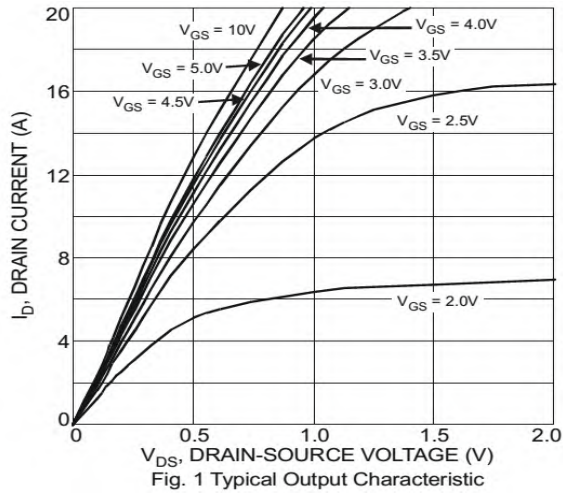
Electrical Characteristics-Q1 (@T_A=25°C unless otherwise specified)

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)						
C _{iss}	Input Capacitance	V _{GS} = 0V	-	422	-	pF
C _{oss}	Output Capacitance	V _{DS} =15V	-	41	-	
C _{rss}	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°C	-	-	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 ($T_A=25^\circ\text{C}$ unless otherwise noted)



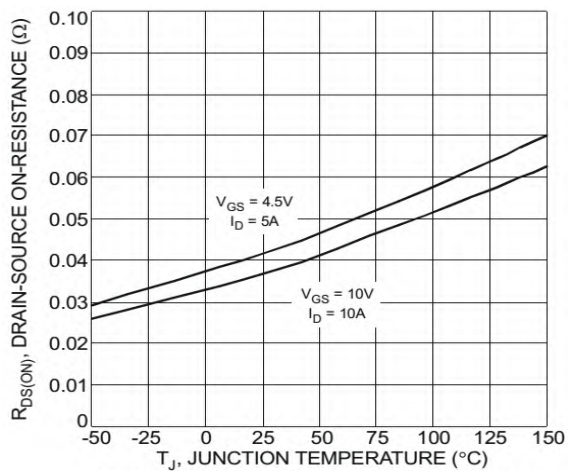


Fig. 7 On-Resistance Variation with Temperature

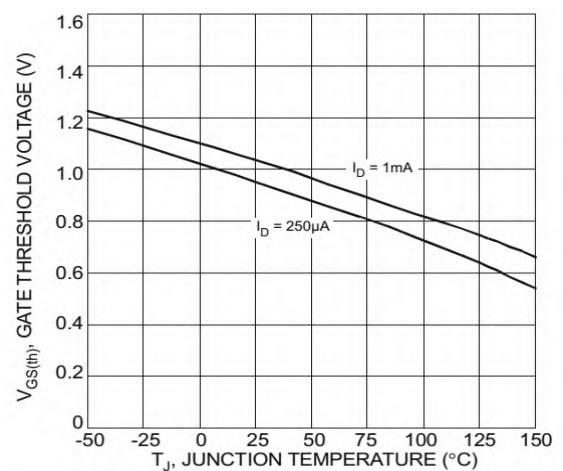


Fig. 8 Gate Threshold Variation vs. Ambient Temperature

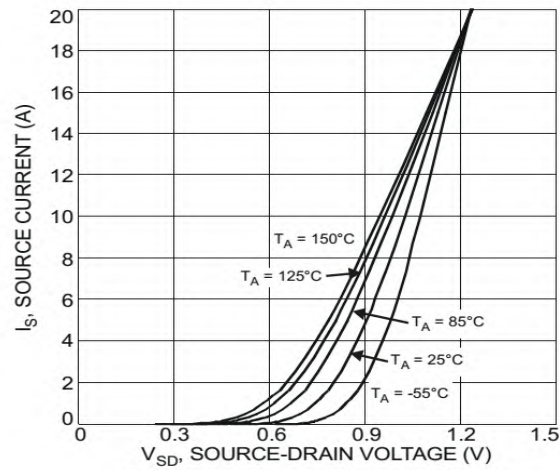


Fig. 9 Diode Forward Voltage vs. Current

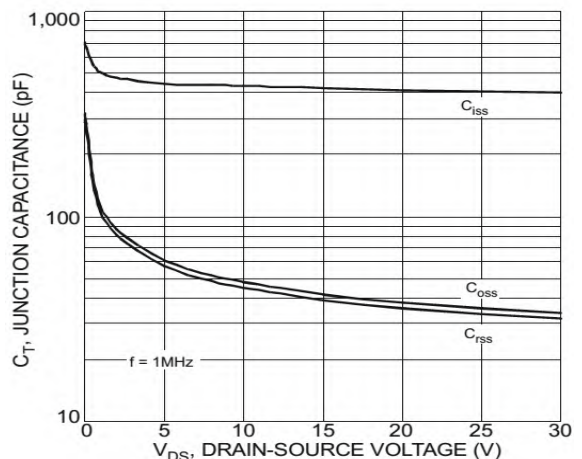


Fig. 10 Typical Junction Capacitance

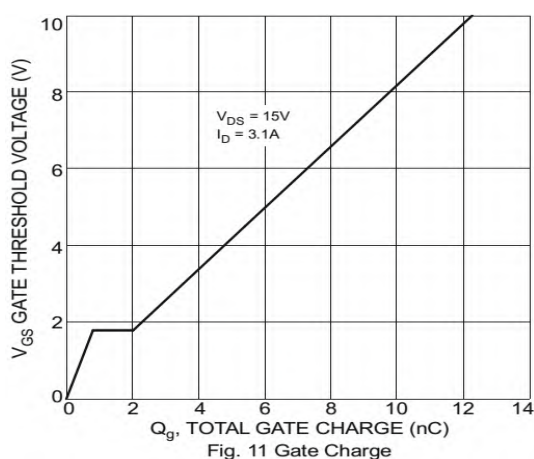


Fig. 11 Gate Charge

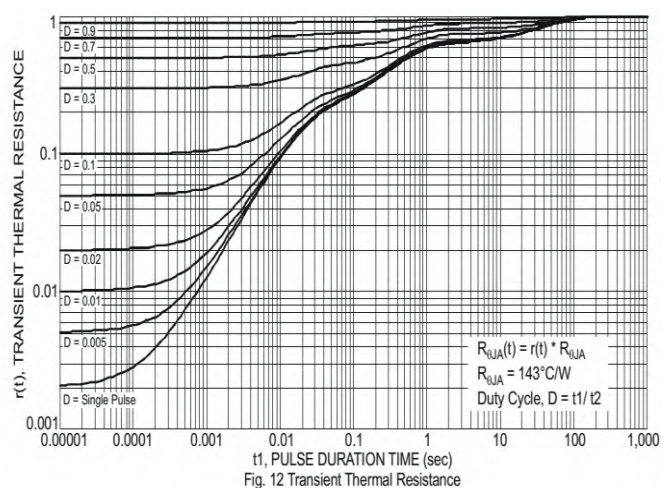
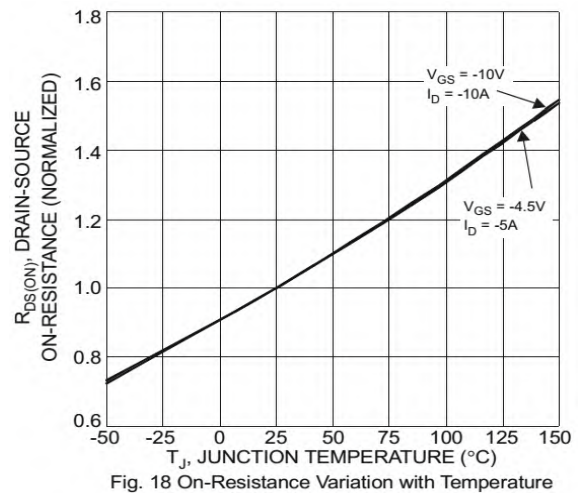
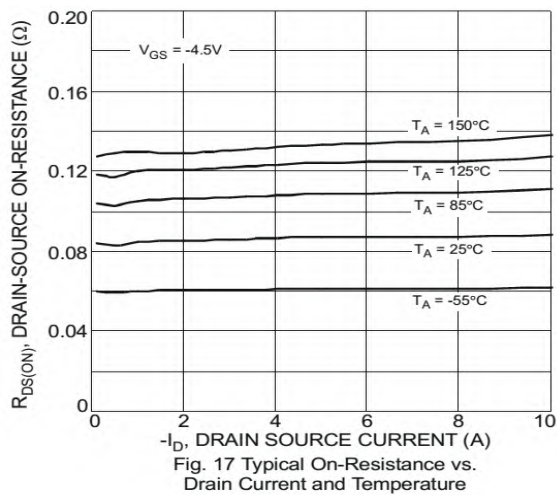
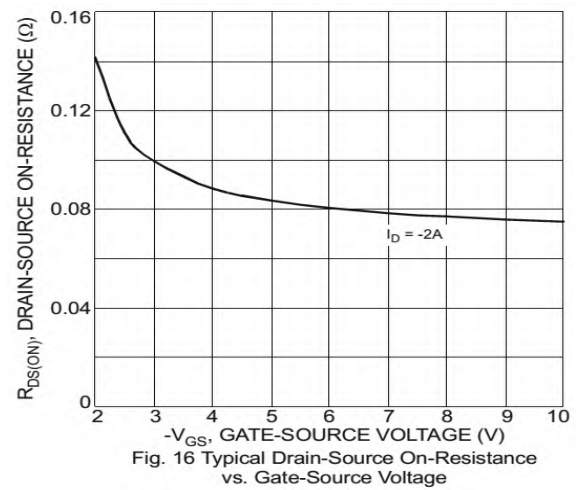
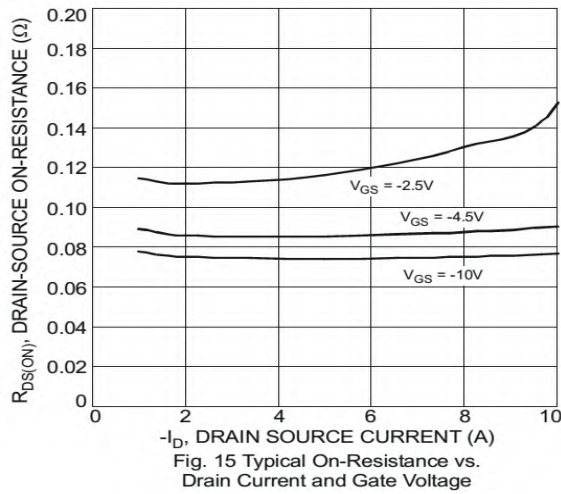
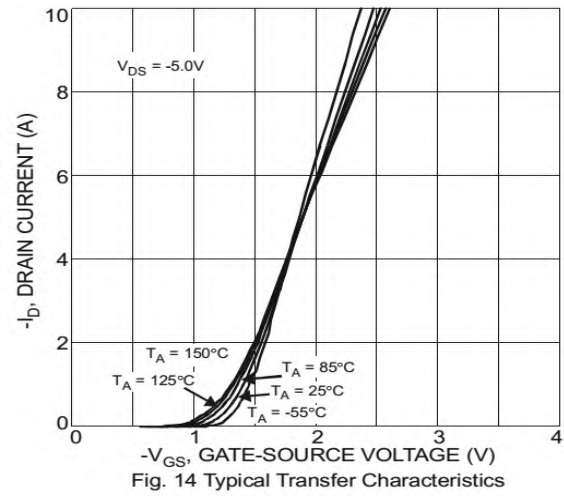
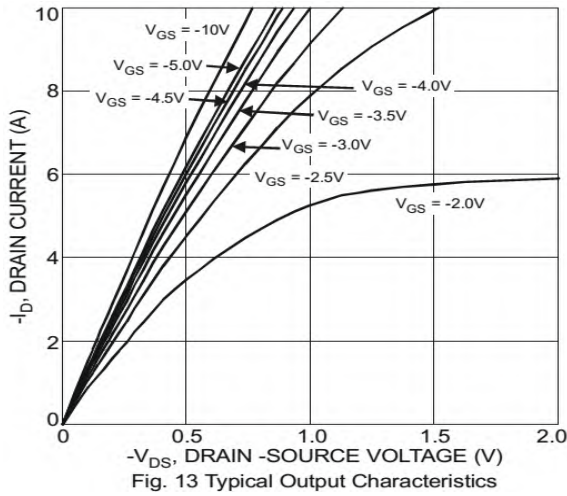


Fig. 12 Transient Thermal Resistance

Ratings and Characteristic Curves-Q2 ($T_A=25^\circ\text{C}$ unless otherwise noted)



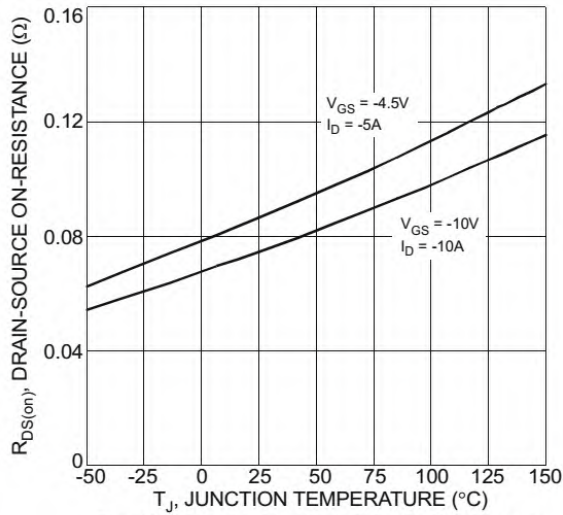


Fig. 19 On-Resistance Variation with Temperature

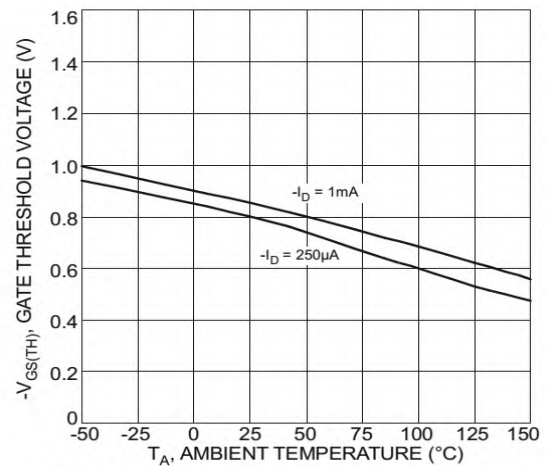


Fig. 20 Gate Threshold Variation vs. Ambient Temperature

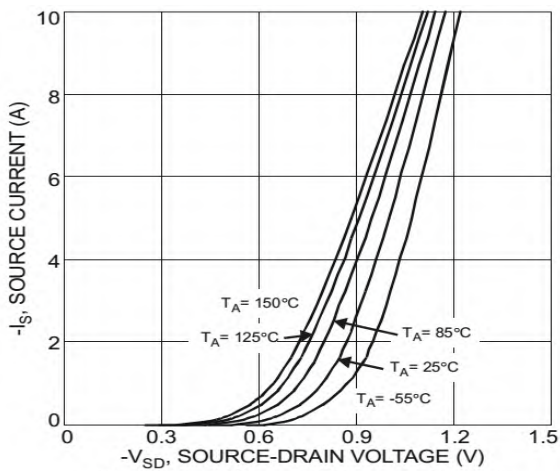


Fig. 21 Diode Forward Voltage vs. Current

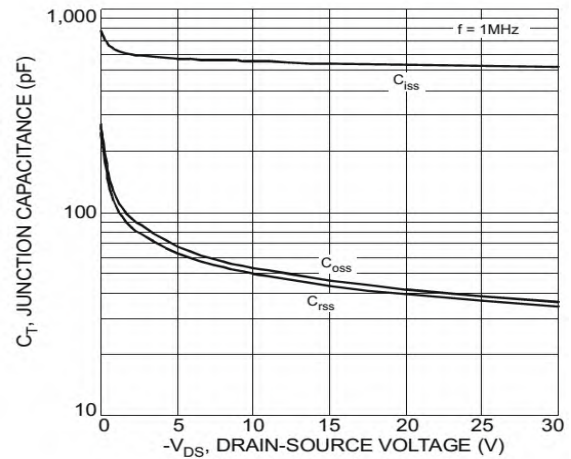


Fig. 22 Typical Junction Capacitance

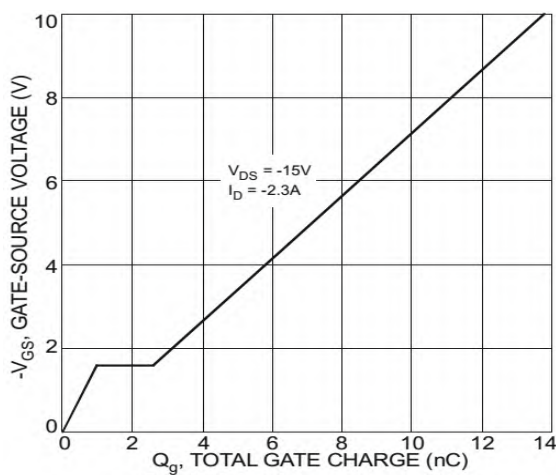
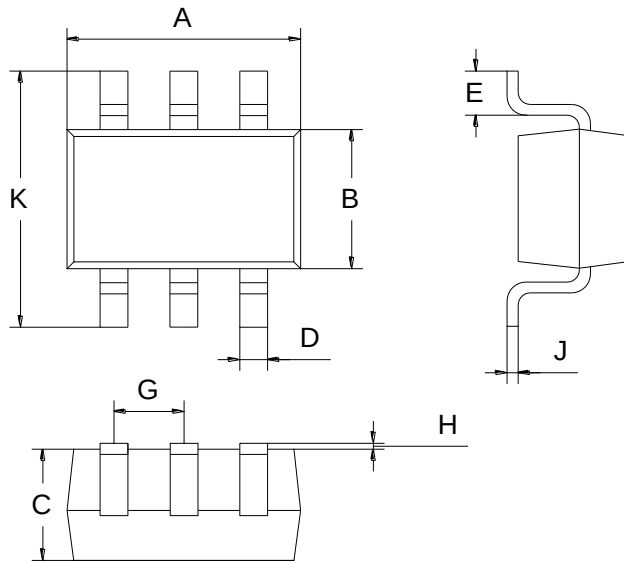


Fig. 23 Gate-Charge Characteristics

Package Outline Dimensions (unit: mm)

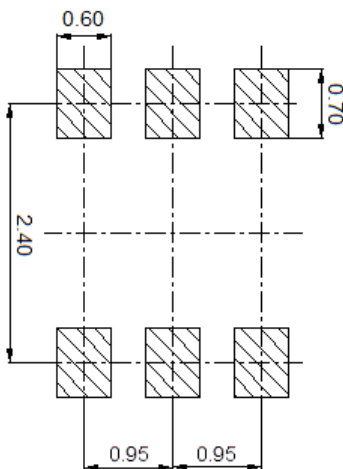
SOT-23-6L



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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