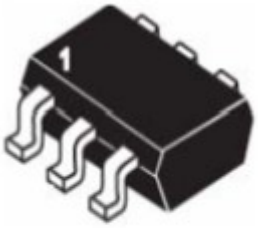
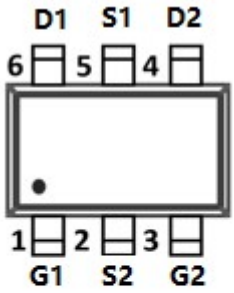
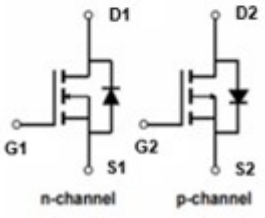
N-Channel and P-Channel Complementary Power MOSFET



SOT-23-6L





Product Summary

NMOS

- V_{DS} 30V
- I_D 3.6A
- $R_{DS(ON)}$(at V_{GS}=10V) ＜33 mohm
- $R_{DS(ON)}$(at V_{GS}=4.5V) ＜48 mohm

PMOS

- V_{DS} -30V
- I_D -3.0A
- $R_{DS(ON)}$(at V_{GS}=-10V) ＜75 mohm
- $R_{DS(ON)}$(at V_{GS}=-4.5V) ＜109 mohm

General Description

- Trench Power LV MOSFET technology
- High density cell design for Low $R_{DS(ON)}$
- High Speed switching

Applications

- Wireless charger
- Load switch
- Power management

■ Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter		Symbol	N-Channel	P-Channel	Unit
Drain-source Voltage		V_{DS}	30	-30	V
Gate-source Voltage		V_{GS}	±20	±20	V
Drain Current	T_A=25℃ @ Steady State	I_D	3.6	-3.0	A
	T_A=70℃ @ Steady State		2.9	-2.4	
Pulsed Drain Current [A]		I_{DM}	15	-13	A
Total Power Dissipation @ T_A=25℃		P_D	1.3	1.3	W
Thermal Resistance Junction-to-Ambient @ Steady State [B]		$R_{\theta JA}$	96	96	℃/ W
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	-55～+150	℃

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJJ3724A	F2	3724A	3000	30000	120000	7“ reel

■ N-MOS Electrical Characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V,V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS1}	V_{GS}=±20V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	1.0	1.5	2.2	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=3.6A		26	33	mΩ
		V_{GS}=4.5V, I_D=2.0A		39	48	
Diode Forward Voltage	V_{SD}	I_S=3.6A,V_{GS}=0V			1.2	V
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=15V,V_{GS}=0V,f=1MHZ		314		pF
Output Capacitance	C_{oss}			59		
Reverse Transfer Capacitance	C_{rss}			48		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V,V_{DS}=15V,I_D=3.6A		6.08		nC
Gate-Source Charge	Q_{gs}			1.26		
Gate-Drain Charge	Q_{gd}			1.32		
Reverse Recovery Chrage	Q_{rr}	I_F=3.6A, di/dt=100A/us		1.66		
Reverse Recovery Time	t_{rr}			17.33		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V, V_{DS}=15V, R_L=4.1Ω R_{GEN}=3Ω		3.8		
Turn-on Rise Time	t_r			23.2		
Turn-off Delay Time	$t_{D(off)}$			7		
Turn-off fall Time	t_f			18.6		

A. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.
B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

■ P-MOS Electrical Characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-250μA	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V,V_{GS}=0V			-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=-250μA	-1.0	-1.5	-2.4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-3.0A		56	75	mΩ
		V_{GS}=-4.5V, I_D=-2.0A		79	109	
Diode Forward Voltage	V_{SD}	I_S=-3A,V_{GS}=0V			-1.2	V
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=-15V,V_{GS}=0V,f=1MHZ		365		pF
Output Capacitance	C_{oss}			59		
Reverse Transfer Capacitance	C_{rss}			45		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=-10V,V_{DS}=-15V,I_D=-3A		7.6		nC
Gate-Source Charge	Q_{gs}			1.64		
Gate-Drain Charge	Q_{gd}			1.22		
Reverse Recovery Chrage	Q_{rr}	I_F=-3A, di/dt=100A/us		3.8		
Reverse Recovery Time	t_{rr}			25		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=-10V, V_{DS}=-15V, I_D=-1A R_{GEN}=2.5Ω		3.2		
Turn-on Rise Time	t_r			17.8		
Turn-off Delay Time	$t_{D(off)}$			18		
Turn-off fall Time	t_f			23.2		

C. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.
D. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

N-MOS Typical Performance Characteristics

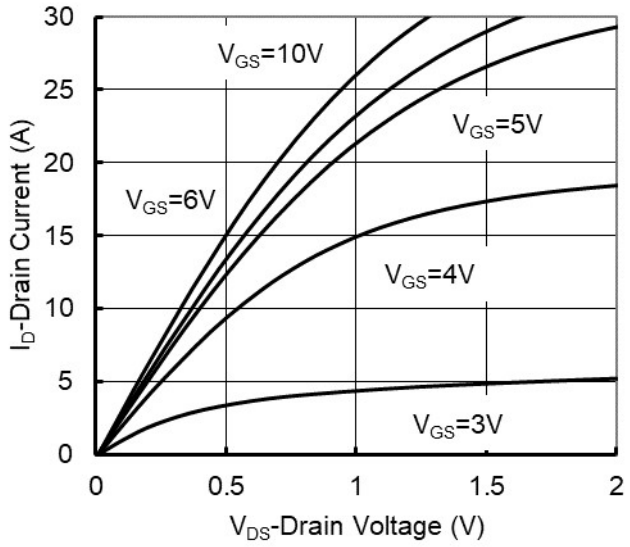


Figure1. Output Characteristics

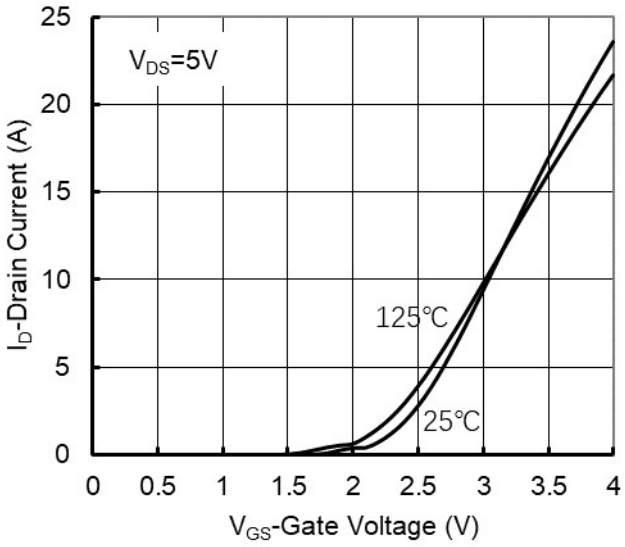


Figure2. Transfer Characteristics

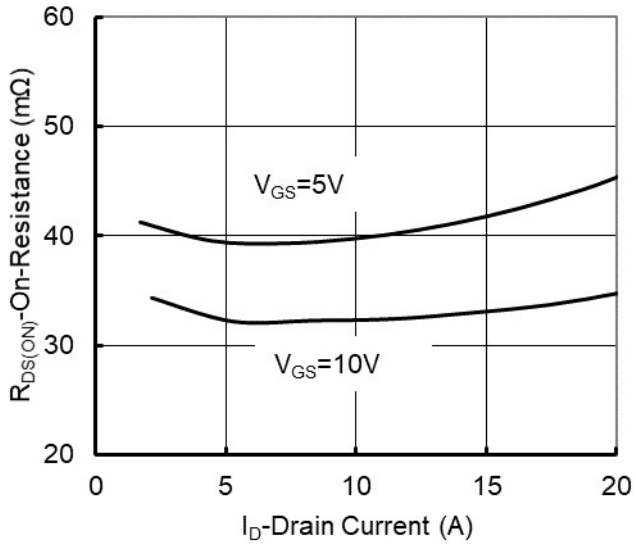


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

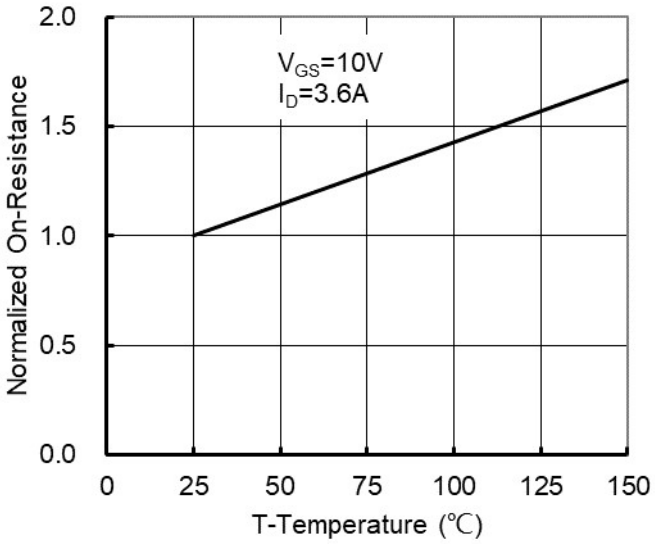


Figure 4: On-Resistance vs. Junction Temperature

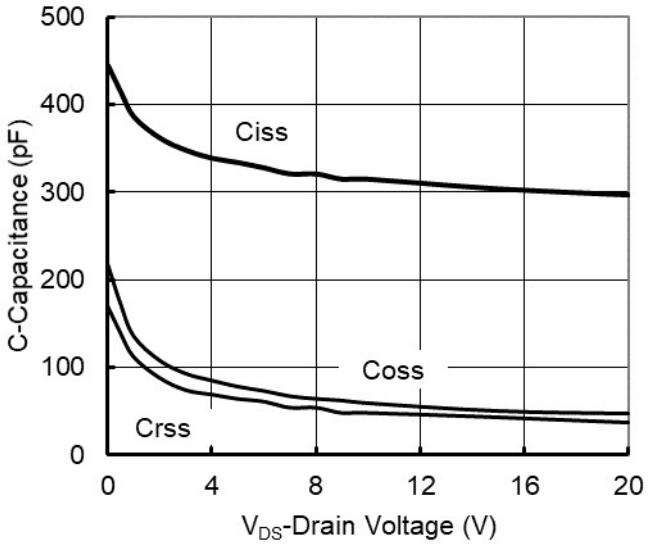


Figure5. Capacitance Characteristics

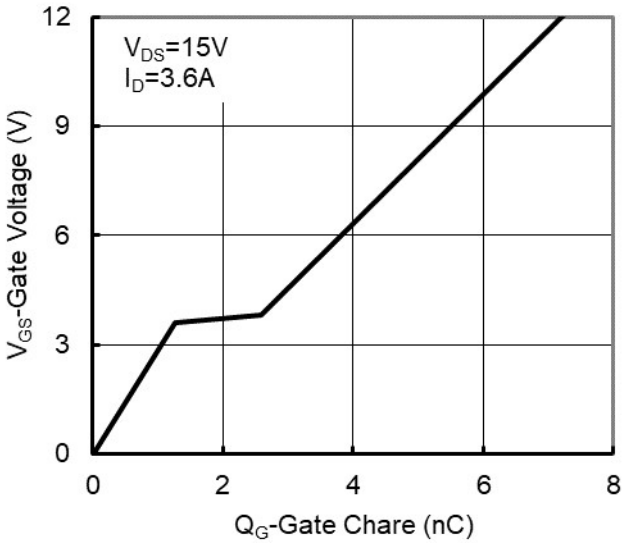


Figure6. Gate Charge

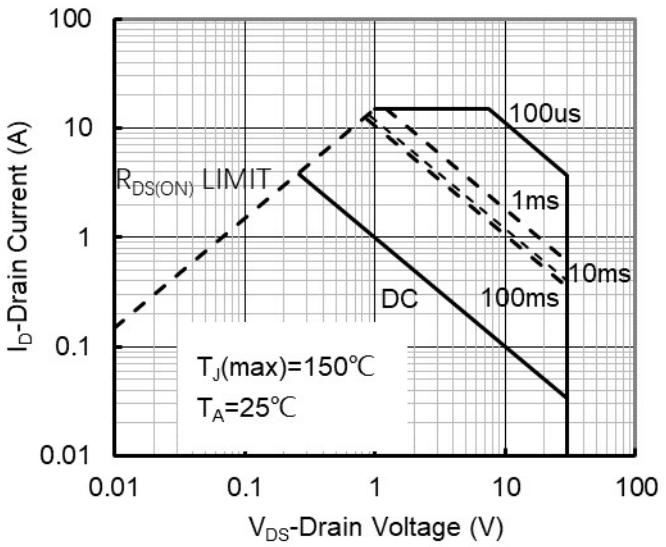


Figure7. Safe Operation Area

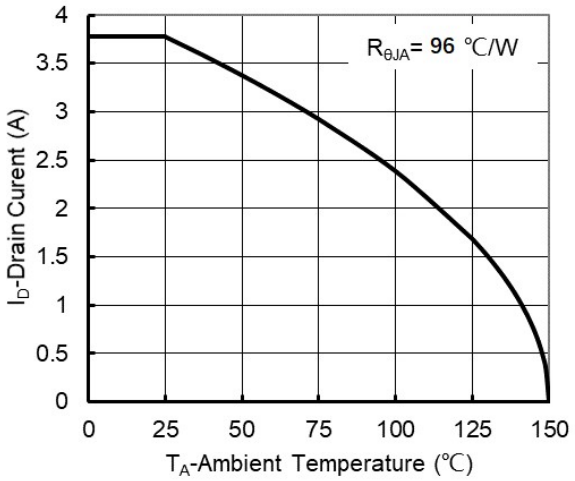


Figure8. Maximum Continuous Drain Current vs Ambient Temperature

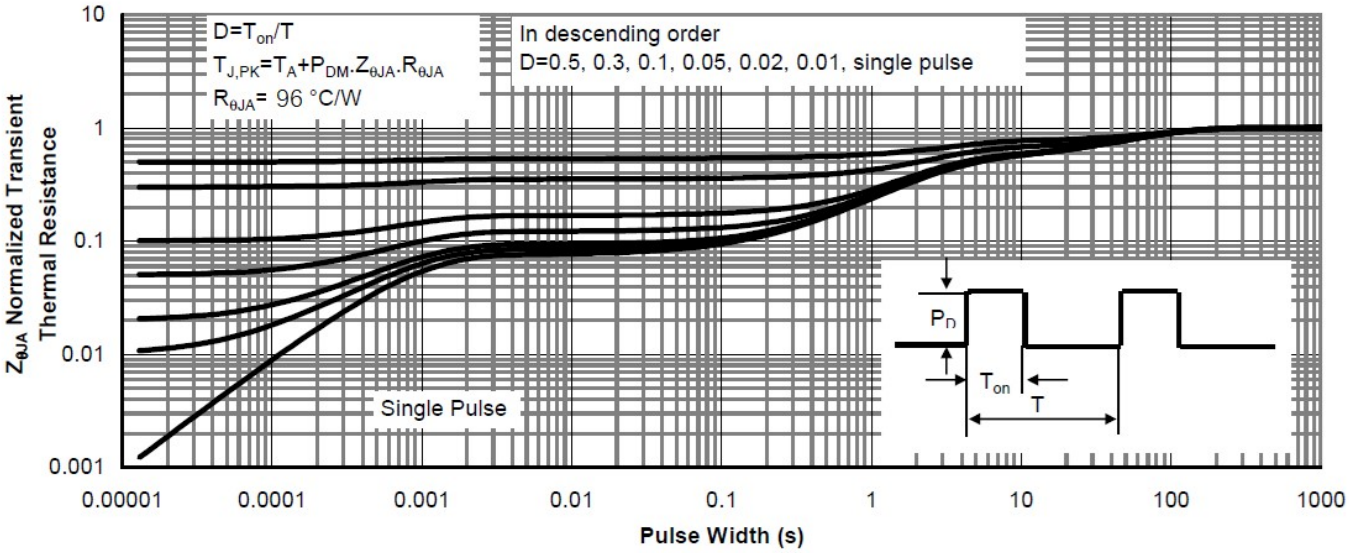


Figure9. Normalized Maximum Transient Thermal Impedance

P-MOS Typical Performance Characteristics

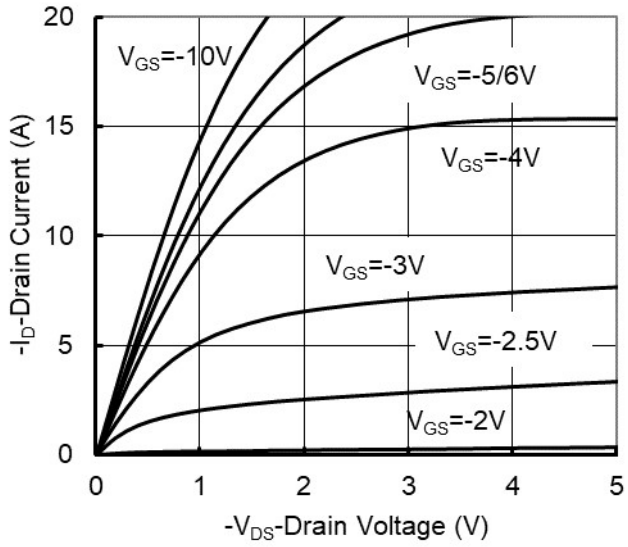


Figure1. Output Characteristics

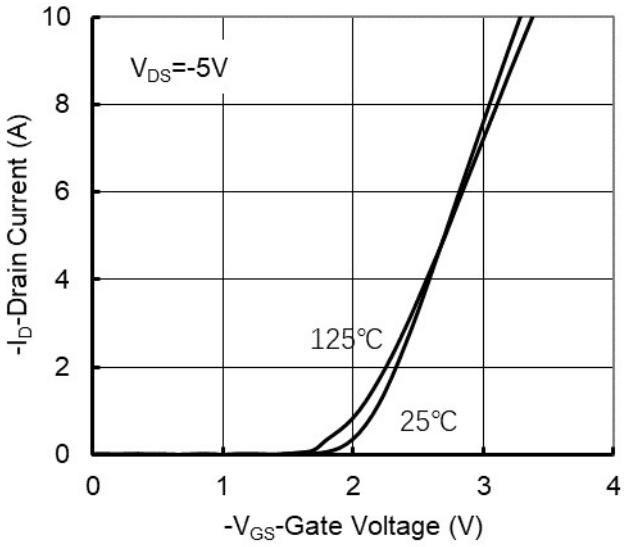


Figure2. Transfer Characteristics

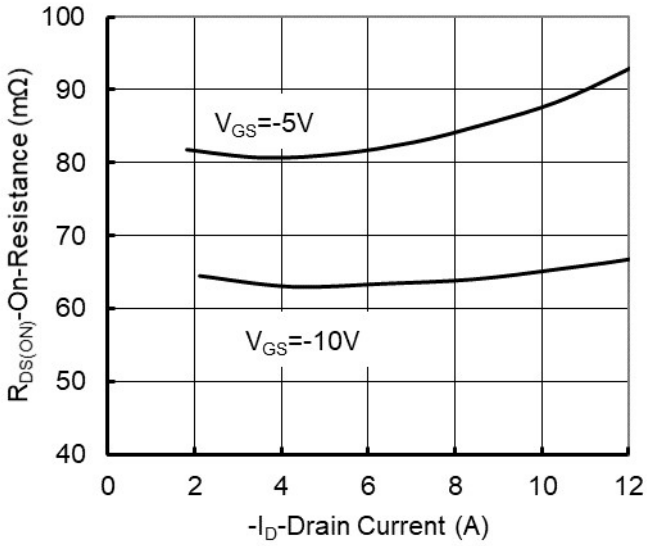


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

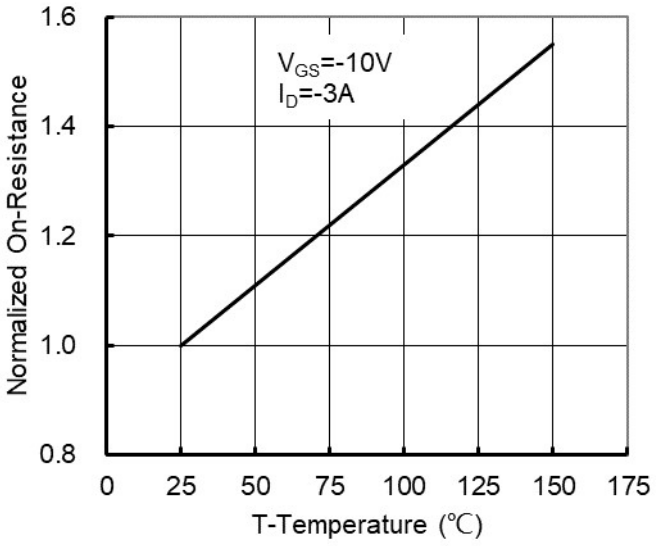


Figure 4: On-Resistance vs. Junction Temperature

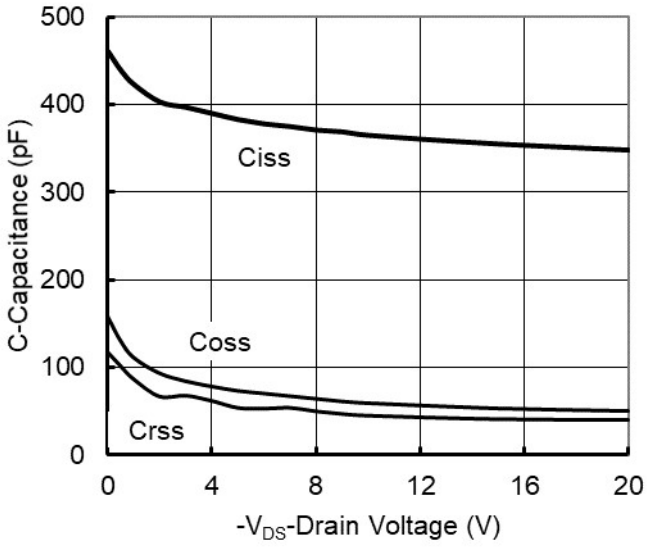


Figure5. Capacitance Characteristics

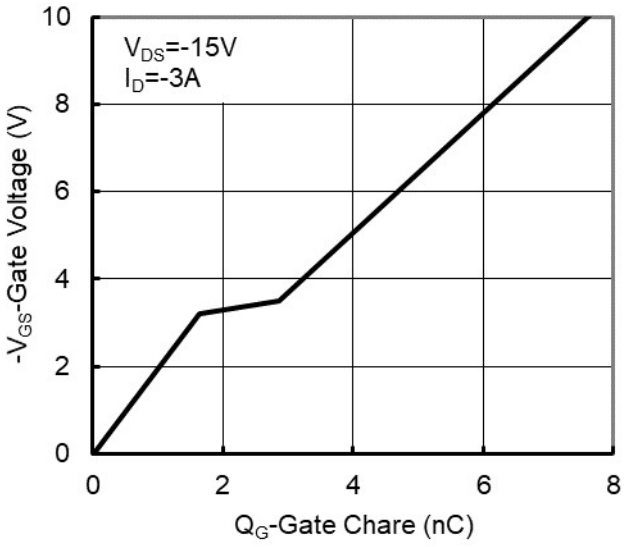


Figure6. Gate Charge

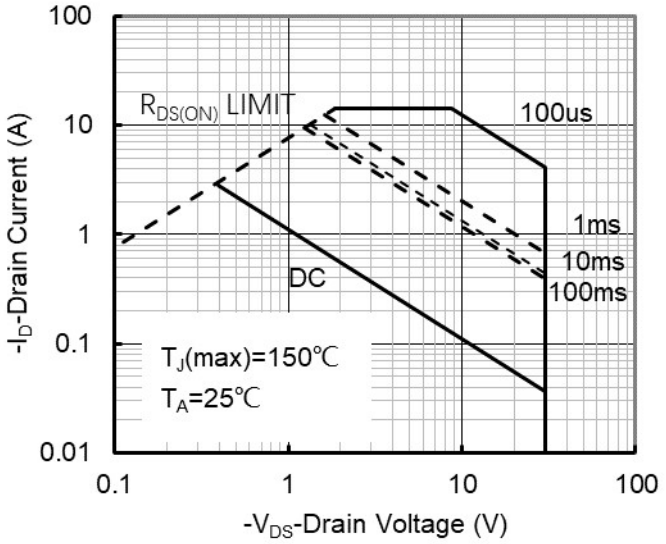
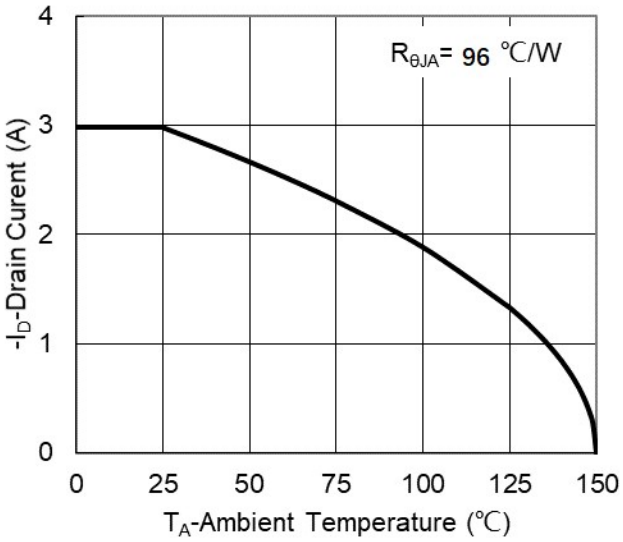


Figure7. Safe Operation Area



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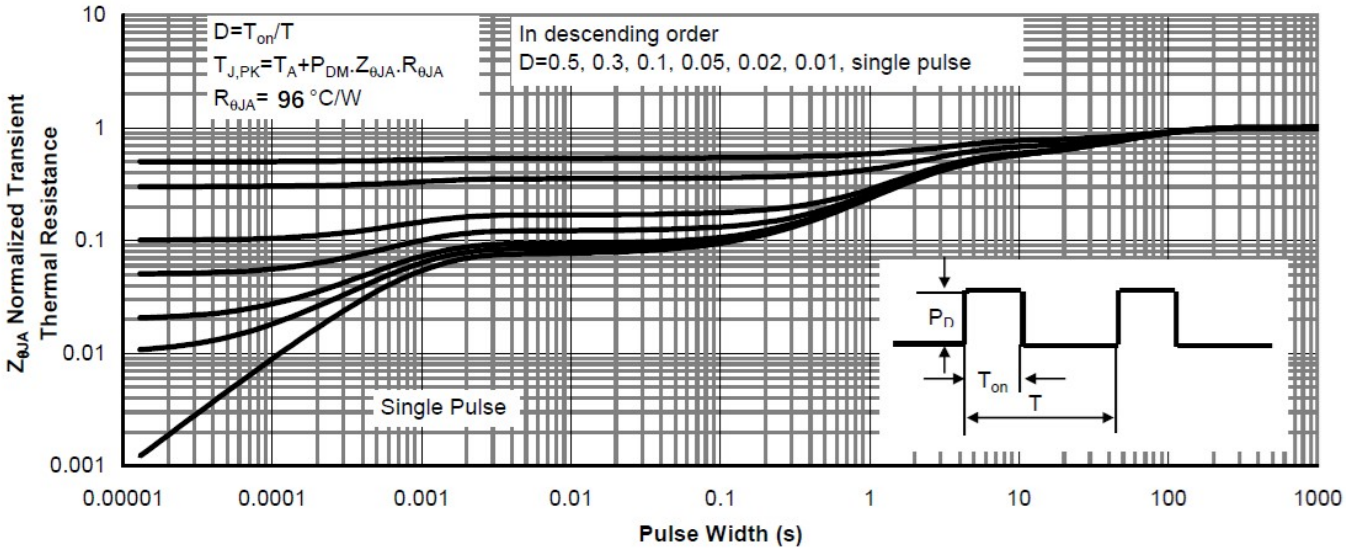
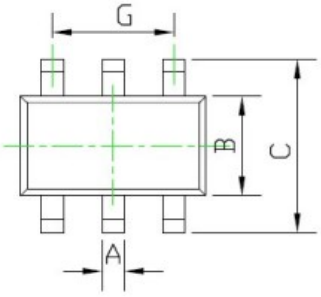
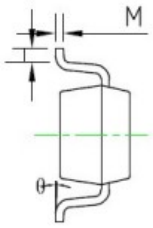


Figure9. Normalized Maximum Transient Thermal Impedance

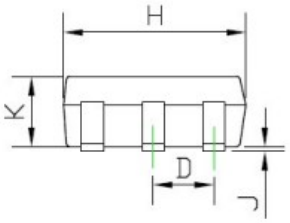
■ SOT23-6L Package information



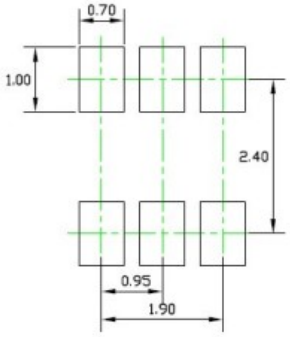
TOP VIEW



SIDE VIEW



SIDE VIEW



Suggested Solder Pad Layout

Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.

DIMENSIONS				
SYMBOL	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.012	0.020	0.300	0.500
B	0.059	0.067	1.500	1.700
C	0.104	0.116	2.650	2.950
D	0.037BSC		0.950BSC	
G	0.075BSC		1.900BSC	
H	0.111	0.119	2.820	3.020
J	0.000	0.004	0.000	0.100
K	0.041	0.045	1.050	1.150
L	0.012	0.024	0.300	0.600
M	0.004	0.008	0.100	0.200
θ	0°	8°	0°	8°

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