Product Summary

- V_{DS} = 30V, I_D = 4A

  $R_{DS(ON)}$ < 75mΩ @ V_{GS}=4.5V

  $R_{DS(ON)}$ < 45mΩ @ V_{GS}=10V

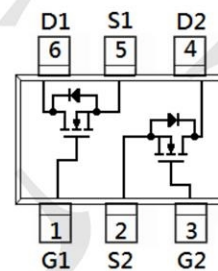## Application

- *Notebook*
- *Load Switch*
- *Networking*
- *Hand-held Instruments*

Package and Pin Configuration

SOT23-6

Top View

Circuit diagram

Marking:

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	4	A
Drain Current-Pulsed [Note 1]	I_{DM}	20	A
Maximum Power Dissipation	P_D	1.2	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	℃

Thermal Characteristic

Thermal Resistance, Junction-to-Ambient [Note 2]	$R_{\theta JA}$	104	℃/W

1

Electrical Characteristics (T$_A$=25℃ unless otherwise noted)

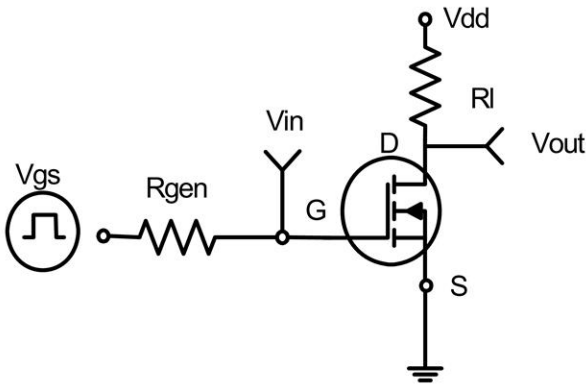| Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV$_{DSS}$	V$_{GS}$=0V I$_D$=250μA	30			V
Zero Gate Voltage Drain Current	I$_{DSS}$	V$_{DS}$=30V,V$_{GS}$=0V	-	-	1	μA
Gate-Body Leakage Current	I$_{GSS}$	V$_{GS}$=±20V,V$_{DS}$=0V	-	-	±100	nA
On Characteristics [Note 3]						
Gate Threshold Voltage	V$_{GS(th)}$	V$_{DS}$=V$_{GS}$,I$_D$=250μA	1.2	1.5	2.2	V
Drain-Source On-State Resistance	R$_{DS(ON)}$	V$_{GS}$=10V, I$_D$=3A	-	35	45	mΩ
		V$_{GS}$=4.5V, I$_D$=2A	-	60	75	mΩ
Forward Transconductance	g$_{FS}$	V$_{DS}$=5V,I$_D$=3.5A	-	12	-	S
Dynamic Characteristics [Note4]						
Input Capacitance	C$_{Iss}$	V$_{DS}$=15V,V$_{GS}$=0V, F=1.0MHz	-	170	-	PF
Output Capacitance	C$_{oss}$		-	35	-	PF
Reverse Transfer Capacitance	C$_{rss}$		-	23	-	PF
Switching Characteristics [Note 4]						
Turn-on Delay Time	t$_{d(on)}$	V$_{DS}$ =15V, R$_L$=4.2Ω V$_{GS}$=10V,R$_{GEN}$=3Ω	-	4.5	-	nS
Turn-on Rise Time	t$_r$		-	1.5	-	nS
Turn-Off Delay Time	t$_{d(off)}$		-	18.5	-	nS
Turn-Off Fall Time	t$_f$		-	15.5	-	nS
Total Gate Charge	Q$_g$	V$_{DS}$=15V,I$_D$=3.5A, V$_{GS}$=10V	-	4.0	-	nC
Gate-Source Charge	Q$_{gs}$		-	0.75	-	nC
Gate-Drain Charge	Q$_{gd}$		-	0.65	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage [Note 3]	V$_{SD}$	V$_{GS}$=0V,I$_S$=3.5A	-	0.8	1.2	V
Diode Forward Current [Note 2]	I$_S$		-	-	3.5	A

Typical Electrical and Thermal Characteristics
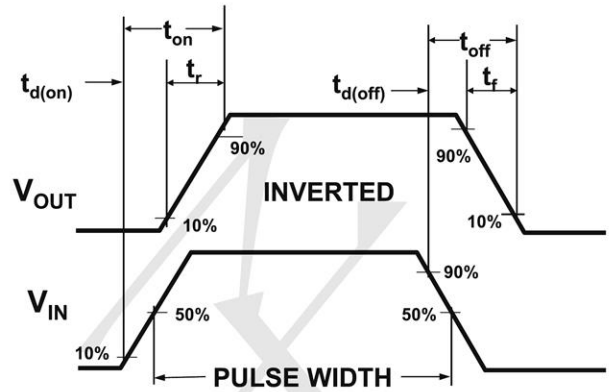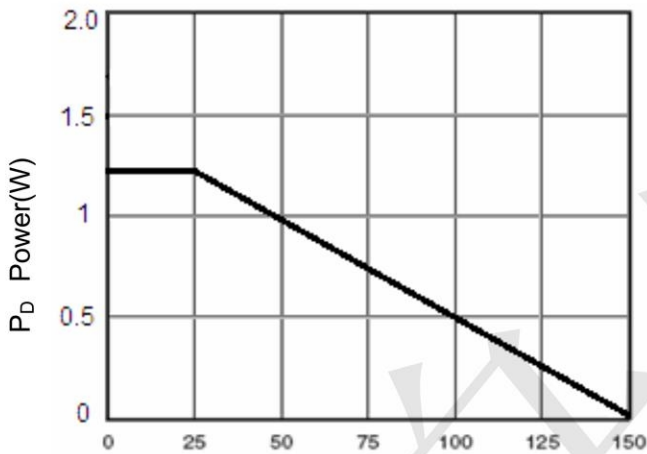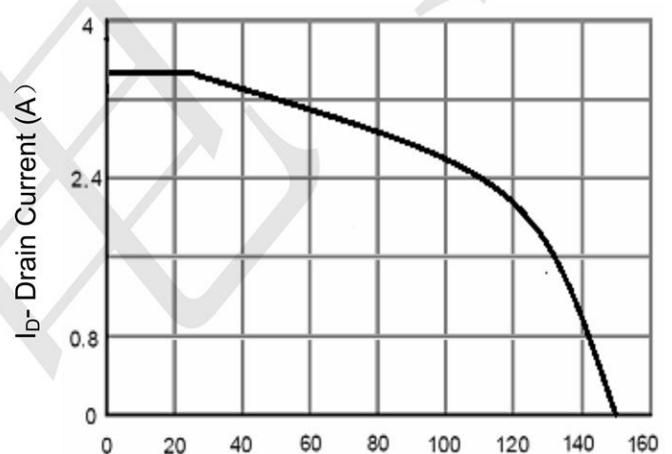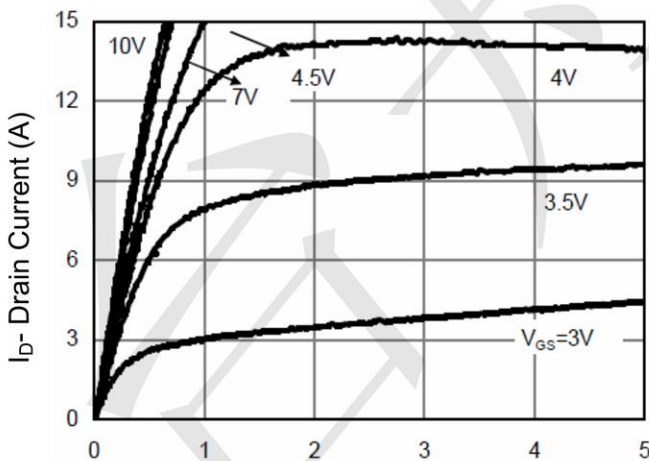

Figure 1:Switching Test Circuit

Figure 2:Switching Waveforms

T_J-Junction Temperature(℃)

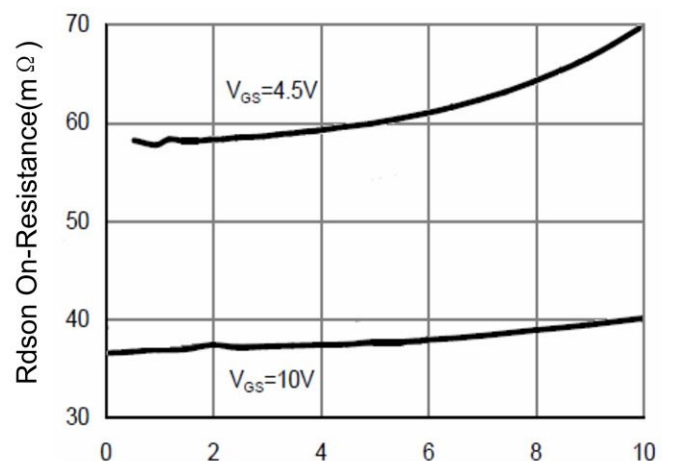**Figure 3 Power Dissipation**

T_J-Junction Temperature(℃)

Figure 4 Drain Current

Vds Drain-Source Voltage (V)

Figure 5 Output Characteristics

I_D- Drain Current (A)

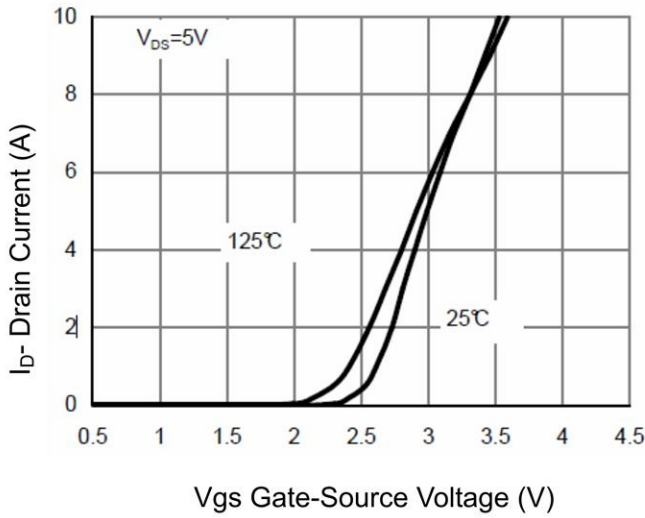**Figure 6 Drain-Source On-Resistance**
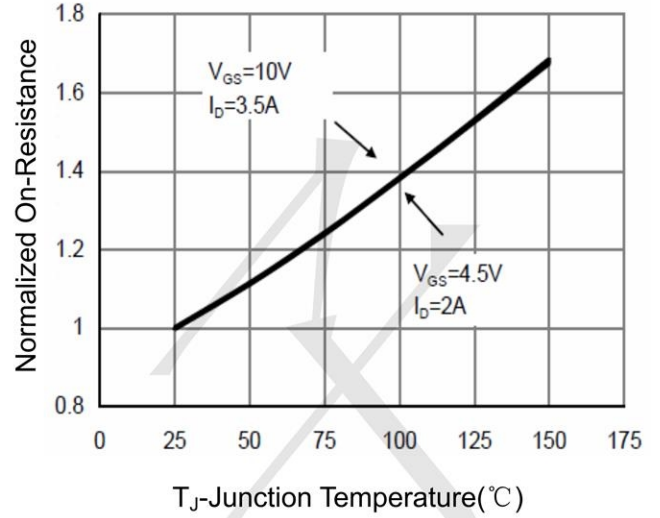
Figure 7 Transfer Characteristics
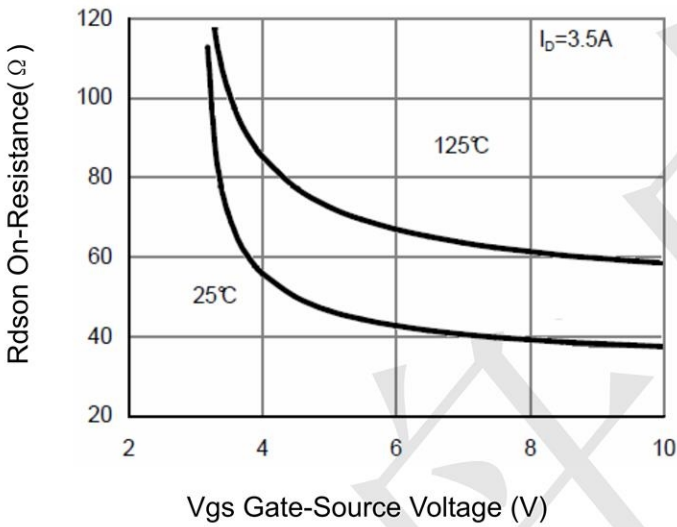
Figure 8 Drain-Source On-Resistance

Figure 9 Rdson vs Vgs

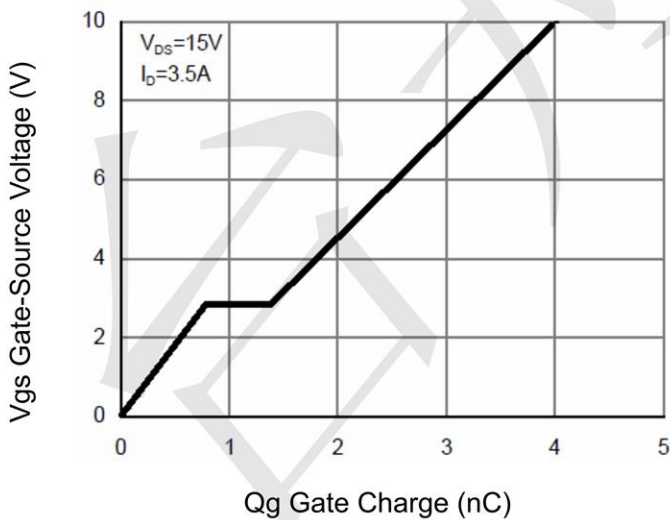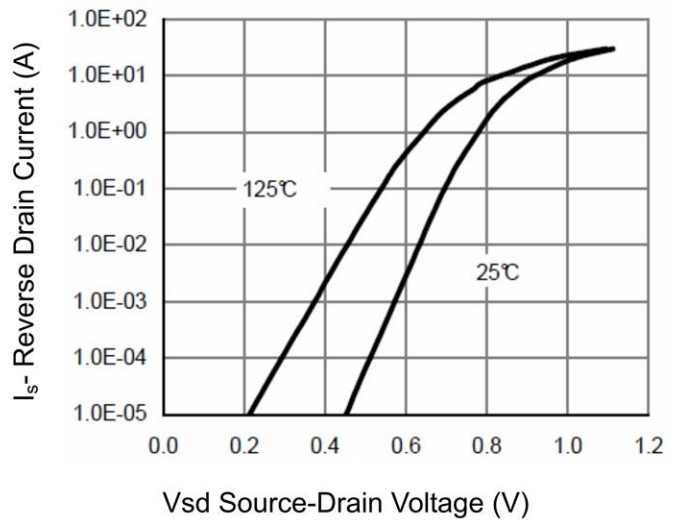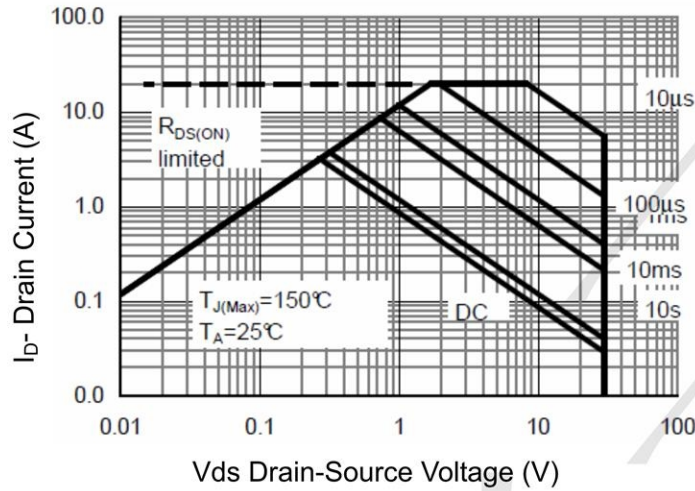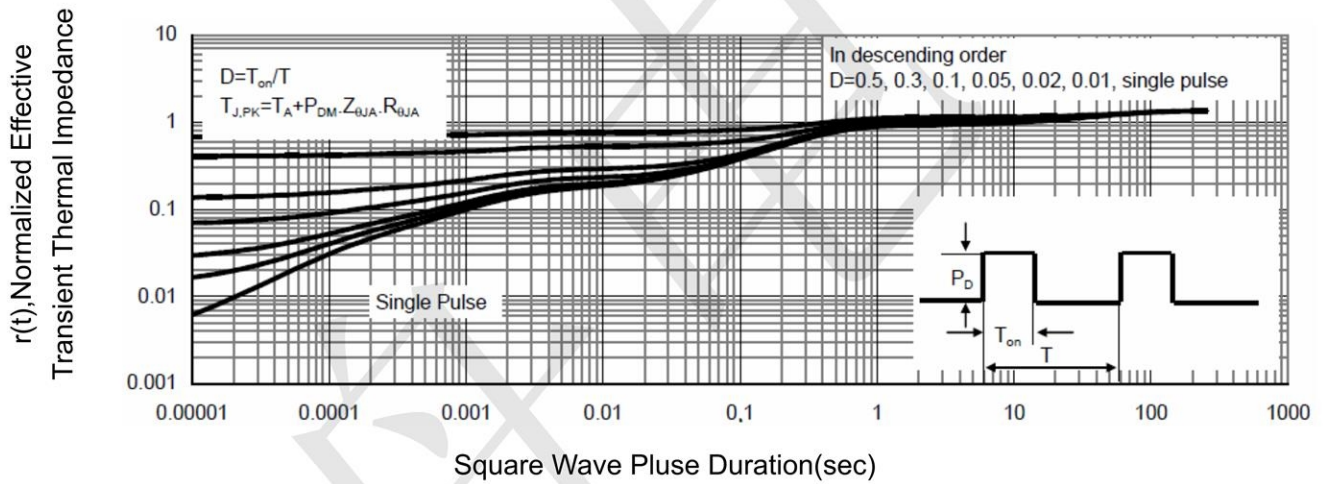**Figure 10 Capacitance vs Vds**

Figure 11 Gate Charge

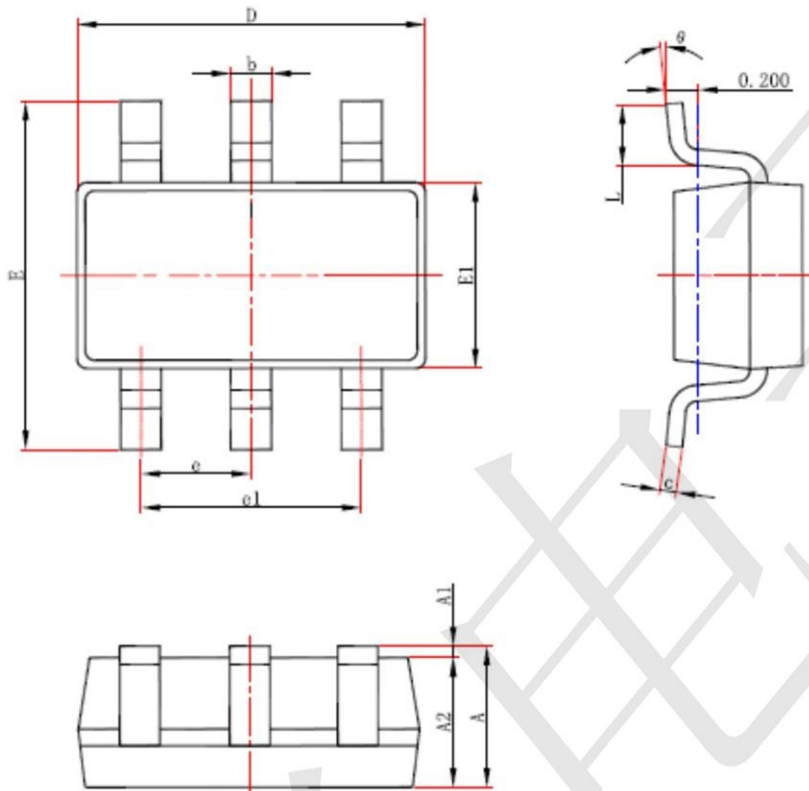**Figure 12 Source- Drain Diode Forward**

Figure 13 Safe Operation Area

Figure 14 Normalized Maximum Transient Thermal Impedance

SOT23-6 Package Outline Dimensions

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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