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GENERAL FEATURES

- V_{DS} =30V, I_D =12A

  $R_{DS(ON)}$ < 12mΩ @ V_{GS}=10V

  $R_{DS(ON)}$ <16mΩ @ V_{GS}=4.5V

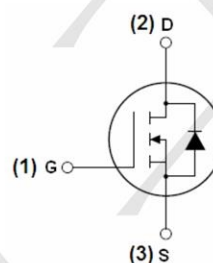## Application

- Battery protection
- Load switch

Package and Pin Configuration

SOP-8 top view
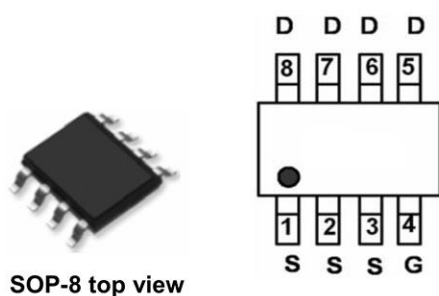
Circuit diagram

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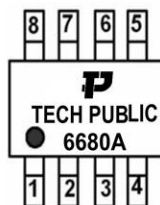
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Absolute Maximum Ratings (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	12	A
Drain Current-Continuous(T_C=100℃)	I_D (100℃)	6	A
Pulsed Drain Current	I_{DM}	50	A
Maximum Power Dissipation	P_D	2.5	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	℃

Thermal Characteristic

Thermal Resistance, Junction-to-Case[Note 2]	$R_{\theta JC}$	50	℃/W

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	1.6	3	V
Drain-Source On-State Resistance	R$_{DS(ON)}$	V$_{GS}$=10V, I$_D$=10A	-	8	12	mΩ
		V$_{GS}$=4.5V, I$_D$=8A	-	11	16	
Forward Transconductance	g$_{FS}$	V$_{DS}$=5V,I$_D$=10A	15	-	-	S
Dynamic Characteristics [Note4]						
Input Capacitance	C$_{Iss}$	V$_{DS}$=15V,V$_{GS}$=0V, F=1.0MHz	-	1550	-	PF
Output Capacitance	C$_{oss}$		-	300	-	PF
Reverse Transfer Capacitance	C$_{rss}$		-	180	-	PF
Switching Characteristics [Note 4]						
Turn-on Delay Time	t$_{d(on)}$	V$_{DD}$=25V,I$_D$=1A V$_{GS}$=10V,R$_{GEN}$=6Ω	-	30	-	nS
Turn-on Rise Time	t$_r$		-	20	-	nS
Turn-Off Delay Time	t$_{d(off)}$		-	100	-	nS
Turn-Off Fall Time	t$_f$		-	80	-	nS
Total Gate Charge	Q$_g$	V$_{DS}$=15V,I$_D$=10A, V$_{GS}$=5V	-	13	-	nC
Gate-Source Charge	Q$_{gs}$		-	5.5	-	nC
Gate-Drain Charge	Q$_{gd}$		-	3.5	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage [Note 3]	V$_{SD}$	V$_{GS}$=0V,I$_S$=10A	-	-	1.2	V
Diode Forward Current [Note 2]	I$_S$		-	-	12	A

Typical Electrical and Thermal Characteristics (Curves)
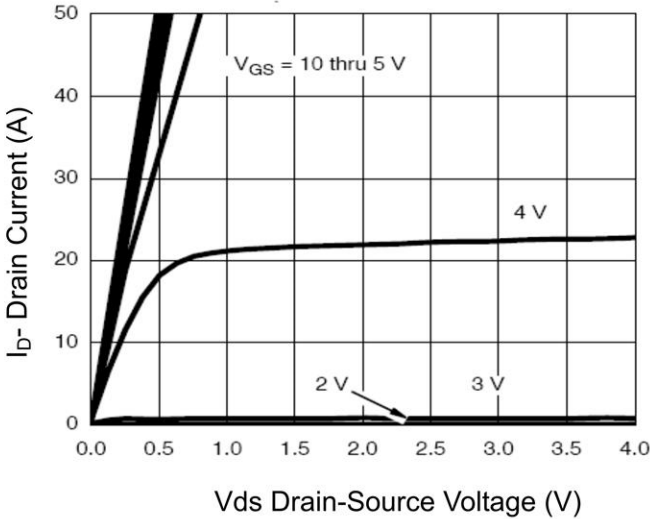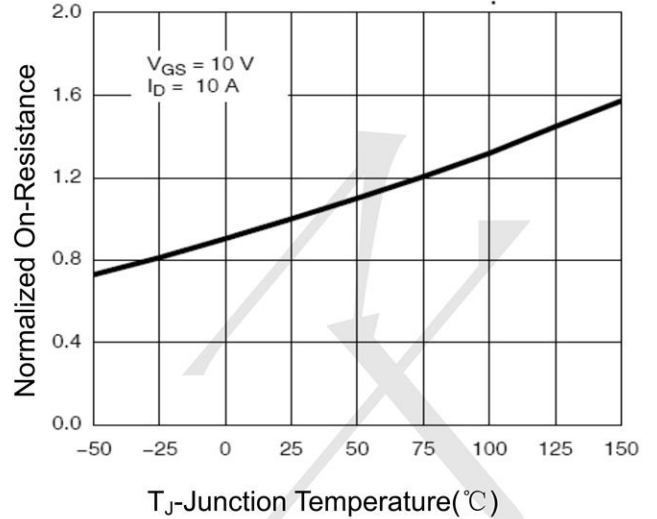

Figure 1 Output Characteristics

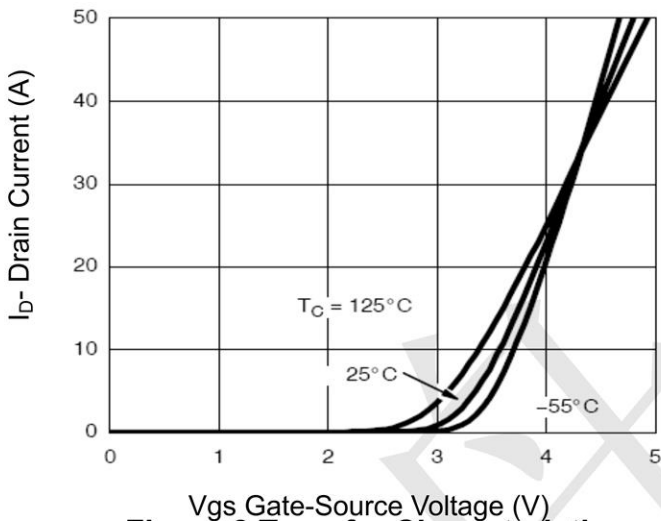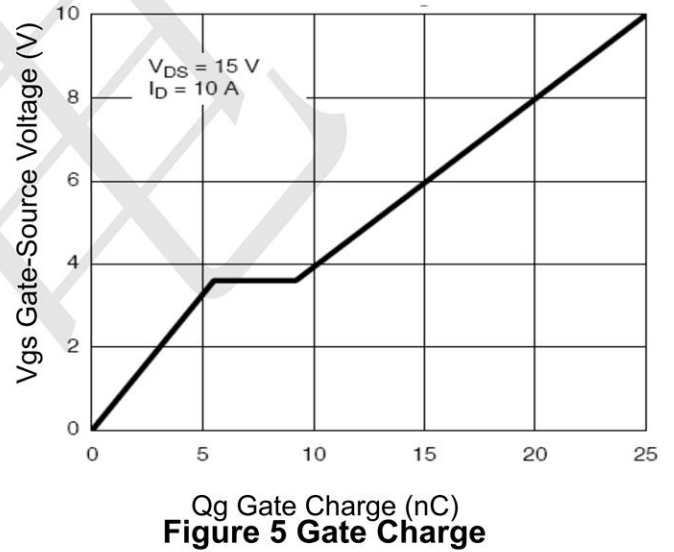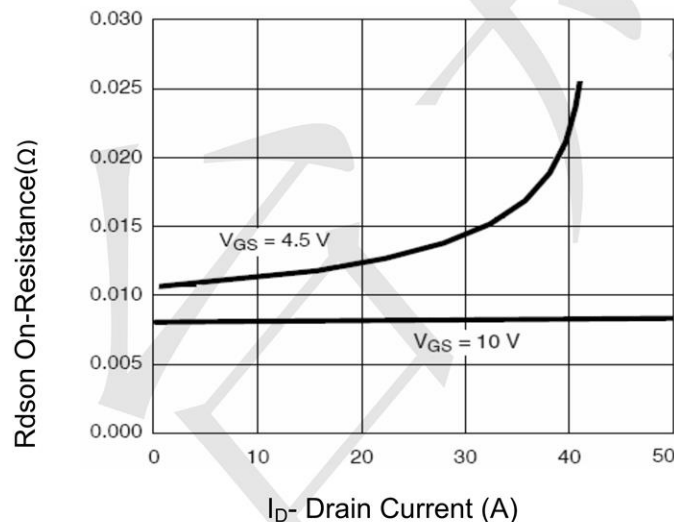**Figure 4 Rdson-JunctionTemperature**

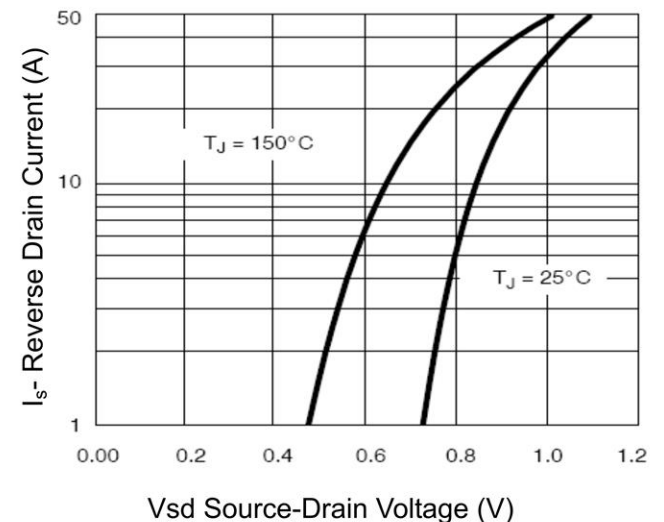**Figure 2 Transfer Characteristics**

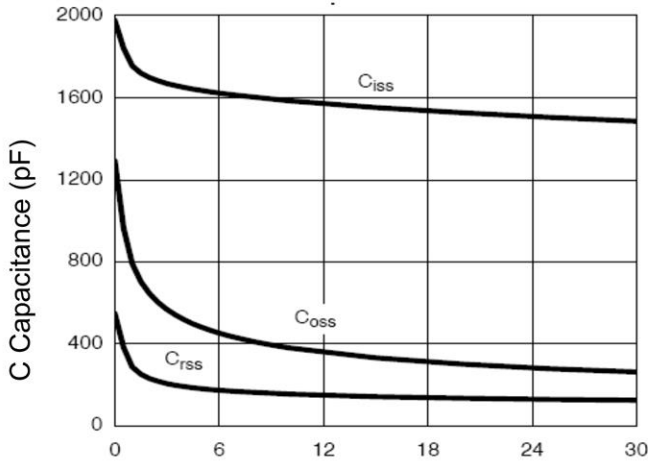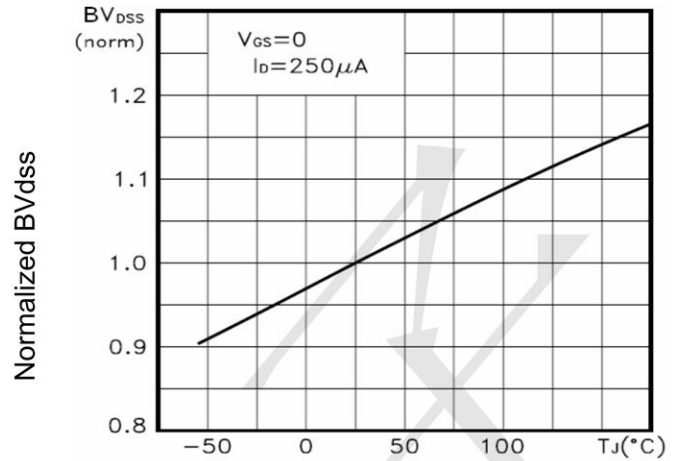
Figure 5 Gate Charge

Figure 3 Rdson- Drain Current

Figure 6 Source- Drain Diode Forward

Figure 7 Capacitance vs Vds

Figure 9 BV$_{DSS}$ vs Junction Temperature
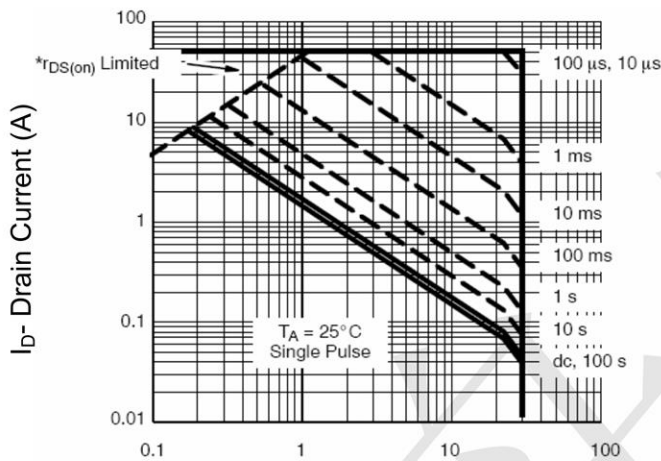
Figure 8 Safe Operation Area
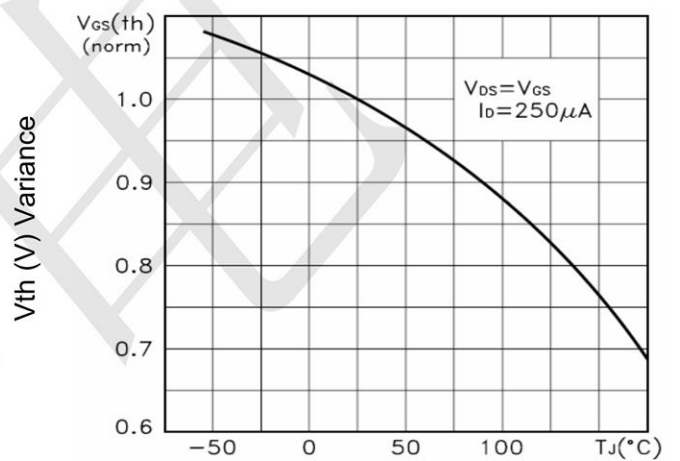
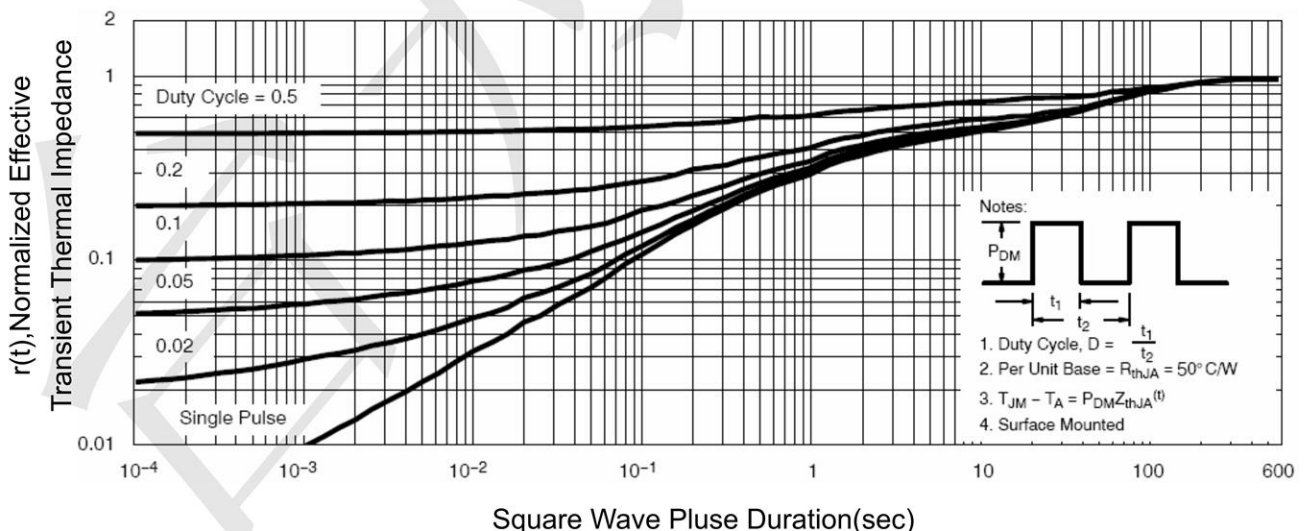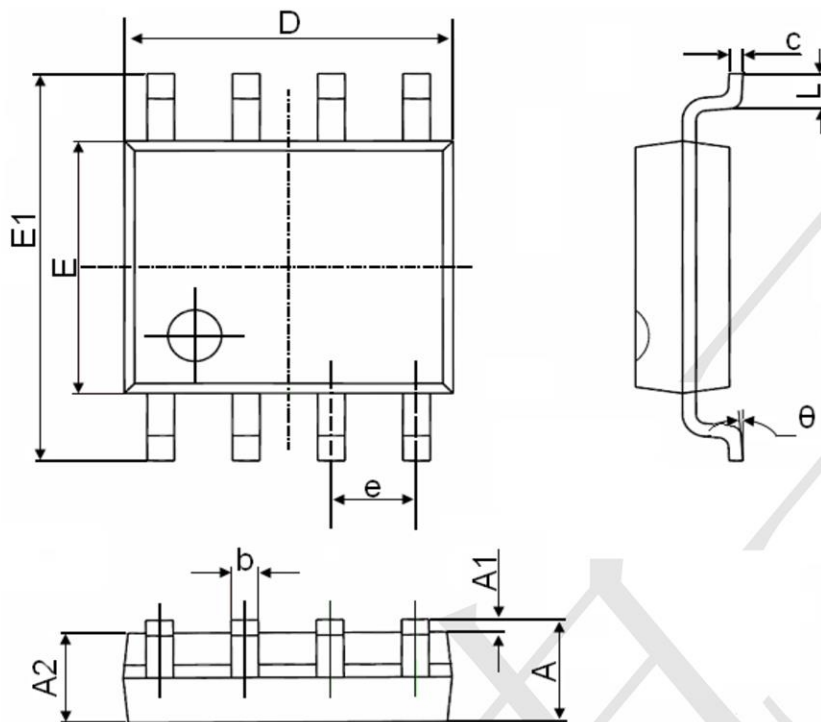**Figure 10 V$_{GS(th)}$ vs Junction Temperature**

Figure 11 Normalized Maximum Transient Thermal Impedance

SOP-8 Package Information

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

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