

Dual N-Ch Fast Switching MOSFETs

Features:

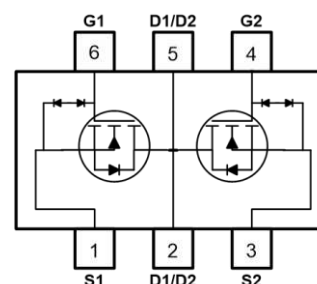
- ★ Advanced Trench MOS Technology
- ★ ESD Protection
- ★ Green Device Available

Applications:

- ★ Power Management.
- ★ Portable Equipment.
- ★ Battery Powered Systems.
- ★ Load Switch.



TSOP6 Pin Configuration



Product Summary

BVDSS	RDSON	ID
20V	27.5mΩ	5A

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 12	V
$I_D @ T_A = 25^\circ\text{C}$	Continuous Drain Current ¹	5.0	A
$I_D @ T_A = 70^\circ\text{C}$	Continuous Drain Current ¹	4.0	A
I_{DM}	Pulsed Drain Current ²	20	A
$P_D @ T_A = 25^\circ\text{C}$	Total Power Dissipation ³	1.25	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹	---	100	$^\circ\text{C/W}$

N-Channel Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=4.5V, I_D=2.75A$	20.0	23	27.5	m Ω
		$V_{GS}=4.0V, I_D=2.75A$	21.0	24	28.5	
		$V_{GS}=3.7V, I_D=2.75A$	22.0	25	30.0	
		$V_{GS}=3.1V, I_D=2.75A$	23.0	27.5	33.0	
		$V_{GS}=2.5V, I_D=2.75A$	25.0	32.5	38.0	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	0.5	0.7	1.2	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=16V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	μA
		$V_{DS}=16V, V_{GS}=0V, T_J=55^\circ\text{C}$	---	---	5	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 8V, V_{DS}=0V$	---	---	± 10	μA
g_{fs}	Forward Transconductance	$V_{DS}=5V, I_D=3A$	---	18	---	S
Q_g	Total Gate Charge	$V_{DS}=15V, V_{GS}=4.5V, I_D=6A$	---	10.2	---	nC
Q_{gs}	Gate-Source Charge		---	1.5	---	
Q_{gd}	Gate-Drain Charge		---	3.0	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=10V, V_{GS}=4.5V, R_G=3.3\Omega$ $I_D=3A$	---	3.5	---	ns
T_r	Rise Time		---	10.0	---	
$T_{d(off)}$	Turn-Off Delay Time		---	32.5	---	
T_f	Fall Time		---	4.0	---	
C_{iss}	Input Capacitance	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	---	636	---	pF
C_{oss}	Output Capacitance		---	66	---	
C_{rss}	Reverse Transfer Capacitance		---	59	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current ^{1,4}	$V_G=V_D=0V$, Force Current	---	---	5.0	A
V_{SD}	Diode Forward Voltage ²	$V_{GS}=0V, I_S=1A, T_J=25^\circ\text{C}$	---	0.75	1.2	V

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper, $t \leq 10s$.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3.The power dissipation is limited by 150°C junction temperature
- 4.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

N-Channel Typical Characteristics

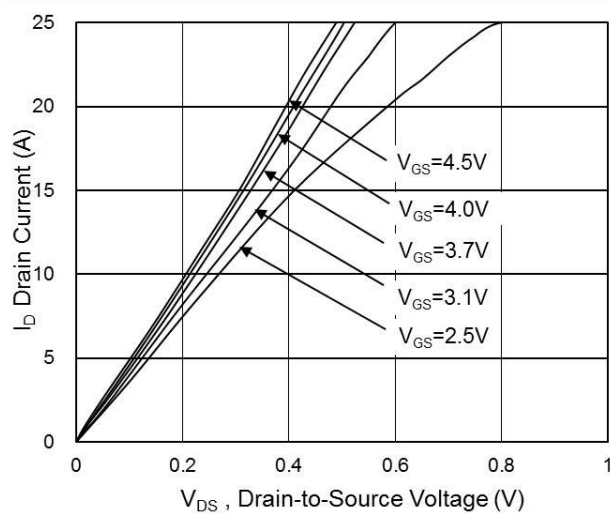


Fig.1 Typical Output Characteristics

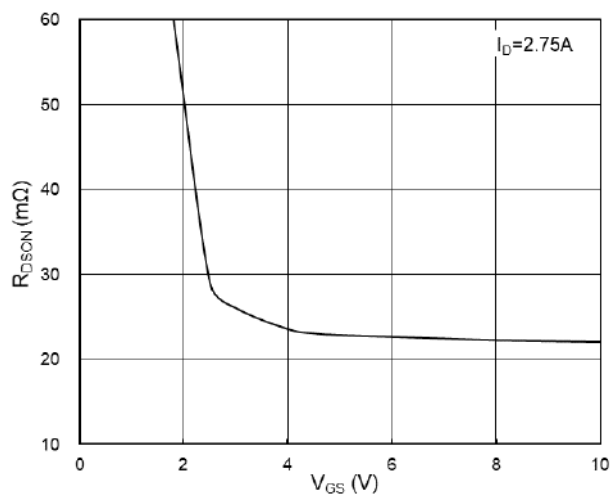


Fig.2 On-Resistance vs G-S voltage

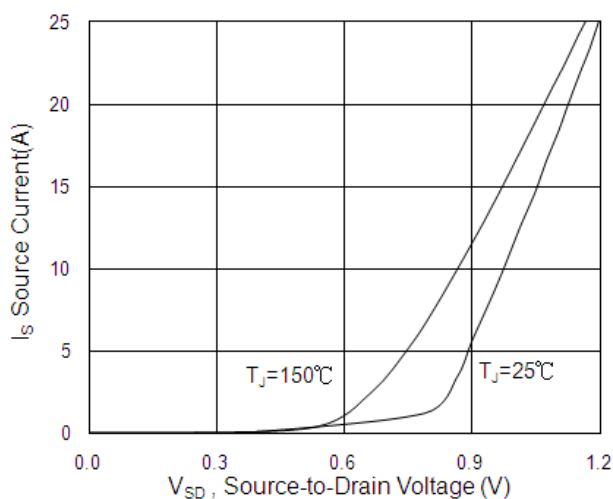


Fig.3 Source Drain Forward Characteristics

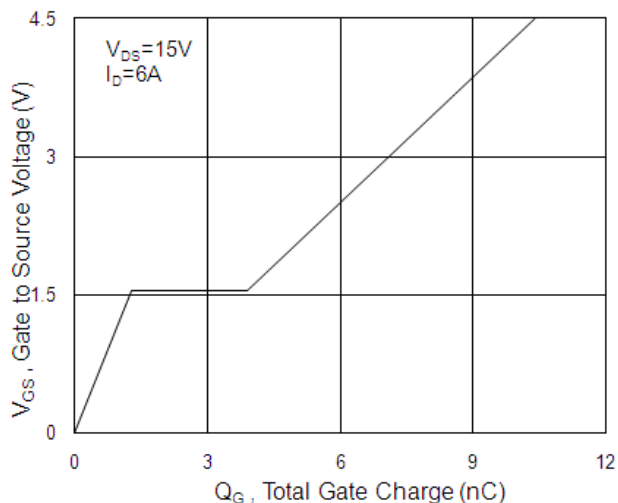


Fig.4 Gate-Charge Characteristics

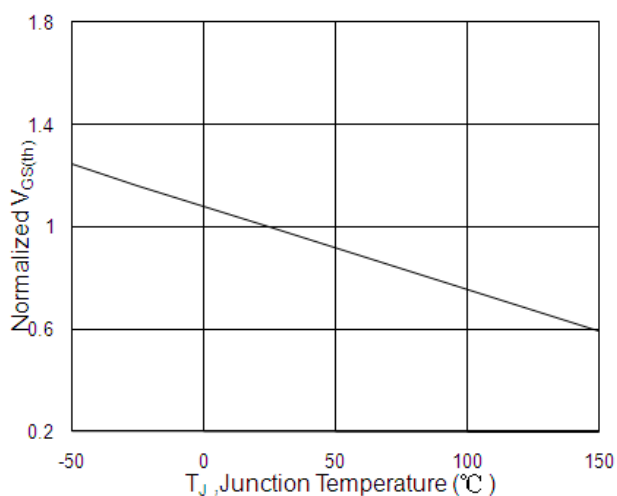


Fig.5 Normalized $V_{GS(th)}$ vs T_J

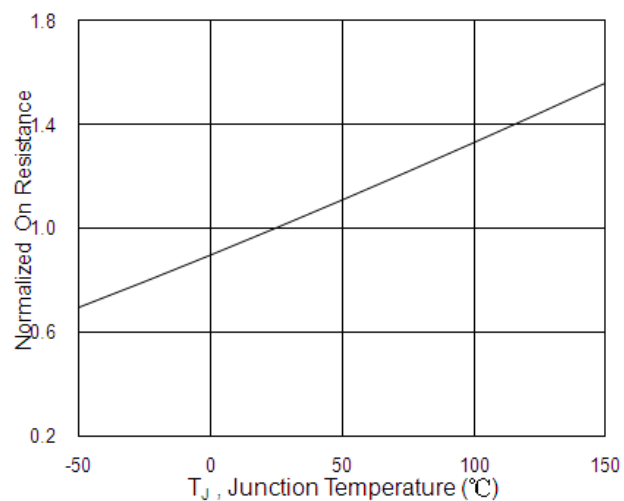


Fig.6 Normalized $R_{DS(on)}$ vs T_J

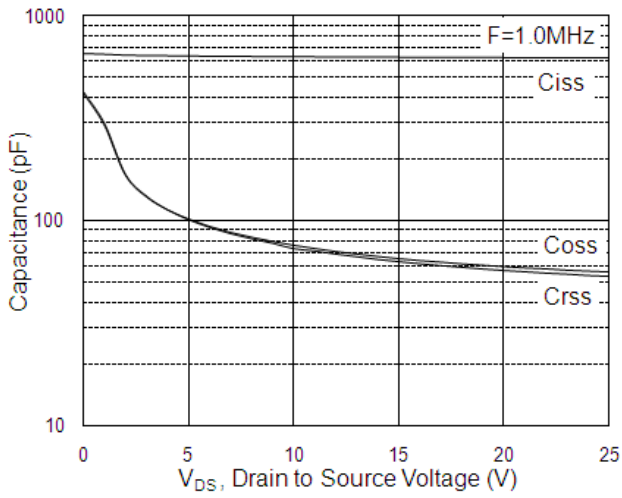


Fig.7 Capacitance

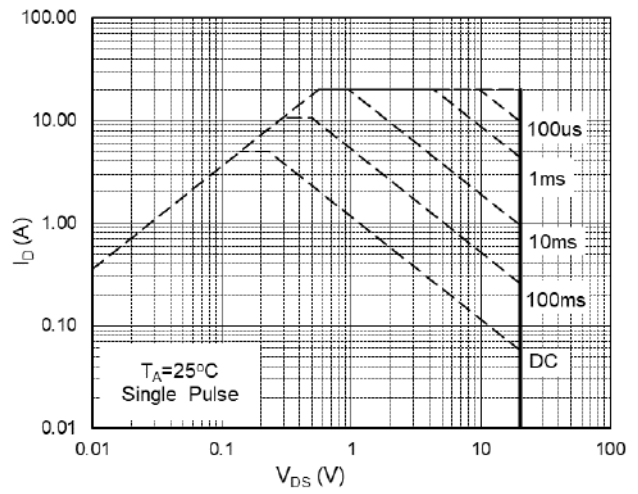


Fig.8 Safe Operating Area

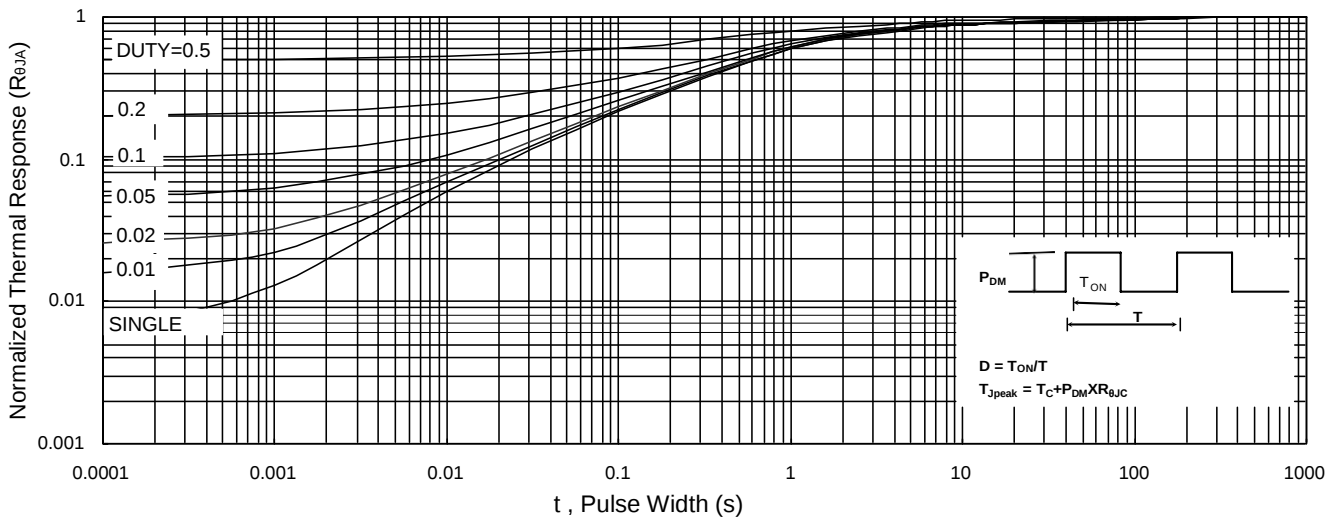
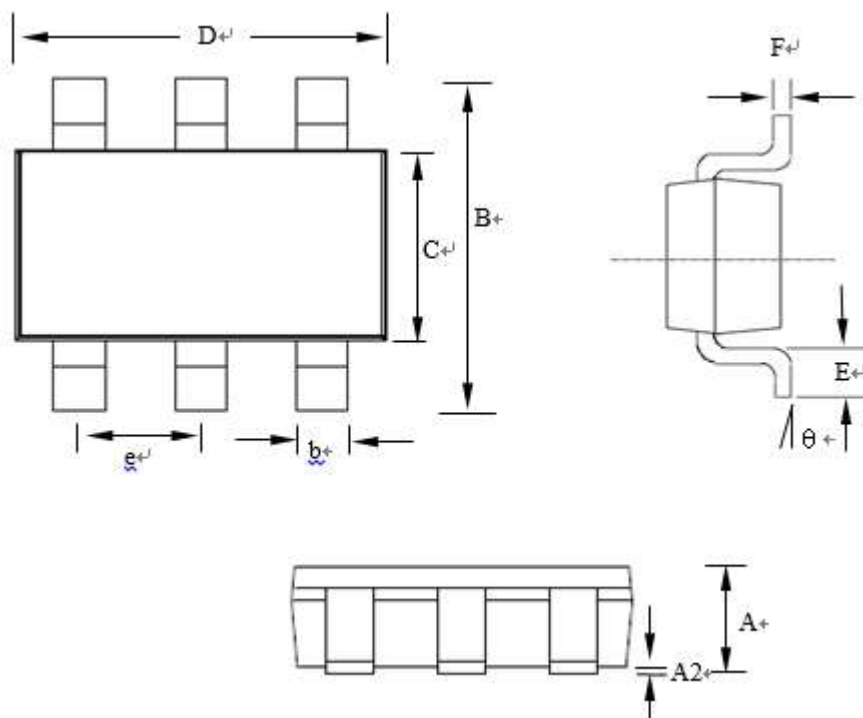


Fig.9 Normalized Maximum Transient Thermal Impedance

TSOP6 Package Outline Dimensions



SYMBOLS	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	---	0.9	0.028	---	0.035
A2	0.00	---	0.10	0.000	---	0.004
B	2.60	2.80	3.00	0.102	0.110	0.118
C	1.40	1.60	1.80	0.055	0.063	0.071
D	2.70	2.90	3.10	0.106	0.114	0.122
E	0.30	0.40	0.60	0.012	0.016	0.024
F	0.07	0.127	0.20	0.003	0.005	0.008
b	0.30	0.40	0.50	0.012	0.016	0.020
e	---	0.95	---	---	0.037	---
θ	0°	5°	10°	0°	5°	10°

TSOP6 Tape and Reel Data

