

Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Green Device Available

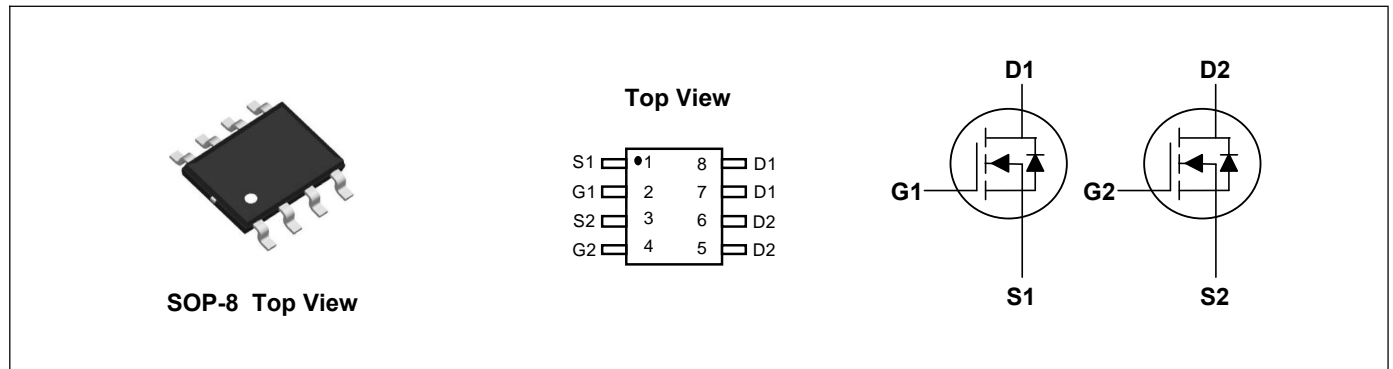
Product Summary



V_{DS}	100	V
I_D	1.5	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	310	m Ω
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	320	m Ω

Applications

- High Frequency Point-of-Load, Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch



Absolute Maximum Ratings ($T_A=25^{\circ}C$, unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	$I_D@T_A=25^{\circ}C$	1.5	A
Continuous Drain Current ¹	$I_D@T_A=70^{\circ}C$	1.2	A
Pulsed Drain Current ²	I_{DM}	3	A
Total Power Dissipation ³	$P_D@T_A=25^{\circ}C$	1.5	W
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}C$
Operating Junction Temperature Range	T_J	-55 to 150	$^{\circ}C$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	---	85	$^{\circ}C/W$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	---	60	$^{\circ}C/W$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=1.5A$	---	260	310	$m\Omega$
		$V_{GS}=4.5V, I_D=1A$	---	270	320	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.0	1.5	2.5	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	---	---	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=1.5A$	---	5.3	---	S
Gate Resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	2.5	---	Ω
Total Gate Charge	Q_g	$V_{DS}=20V, V_{GS}=4.5V, I_D=1.5A$	---	4	---	nC
Gate-Source Charge	Q_{gs}		---	1.2	---	
Gate-Drain Charge	Q_{gd}		---	1.3	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=50V, V_{GS}=10V, R_G=3.3\Omega, I_D=1.5A$	---	5.2	---	ns
Rise Time	T_r		---	7	---	
Turn-Off Delay Time	$T_{d(off)}$		---	14	---	
Fall Time	T_f		---	2	---	
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	---	500	---	pF
Output Capacitance	C_{oss}		---	28	---	
Reverse Transfer Capacitance	C_{rss}		---	16	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage ²	V_{SD}	$V_{GS}=0V, I_S=1A, T_J=25^{\circ}\text{C}$	---	0.7	1.2	V

Note:

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3.The power dissipation is limited by 150 $^{\circ}\text{C}$ junction temperature

Typical Characteristics

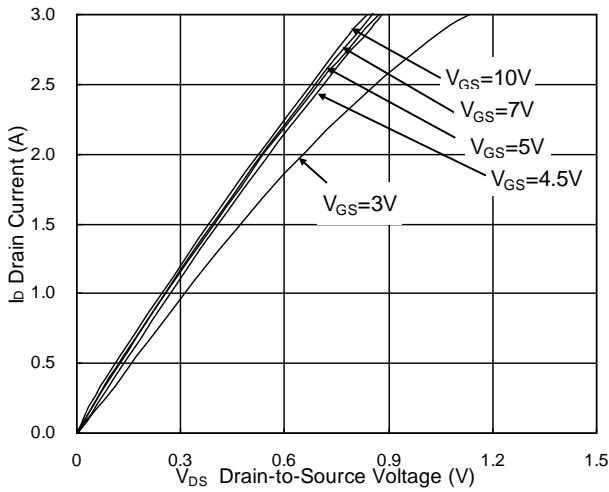


Fig.1 Typical Output Characteristics

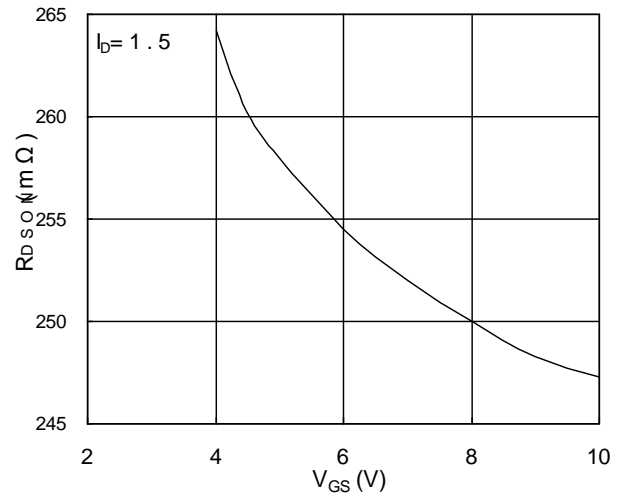


Fig.2 On-Resistance vs. Gate-Source

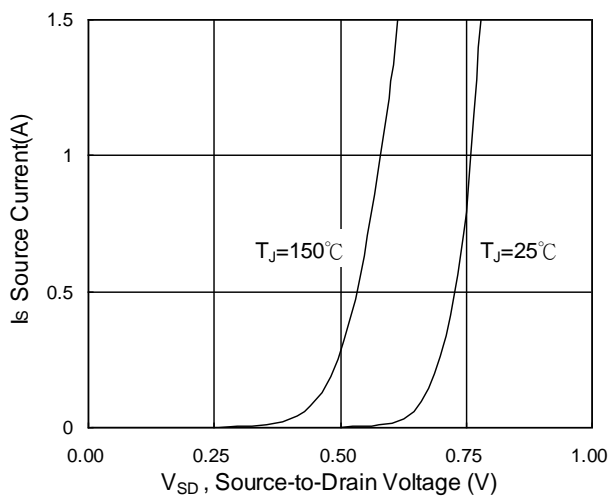


Fig.3 Forward Characteristics Of Reverse

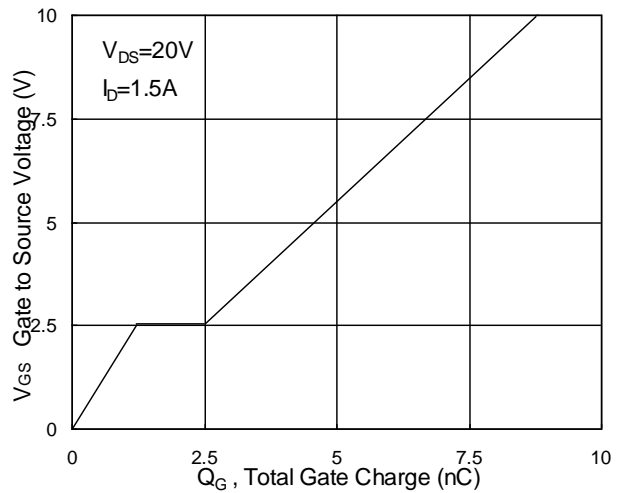


Fig.4 Gate-Charge Characteristics

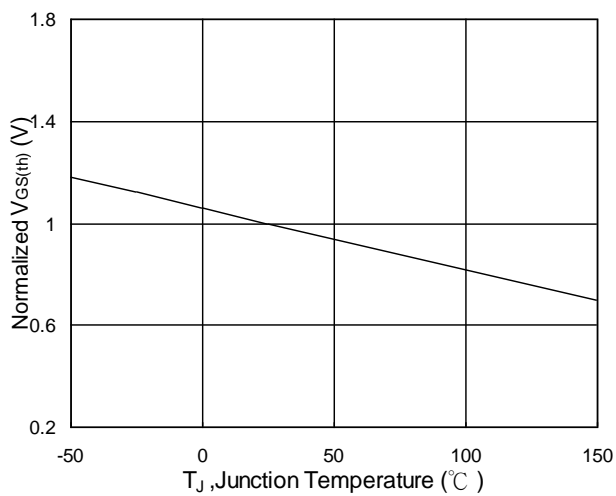


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

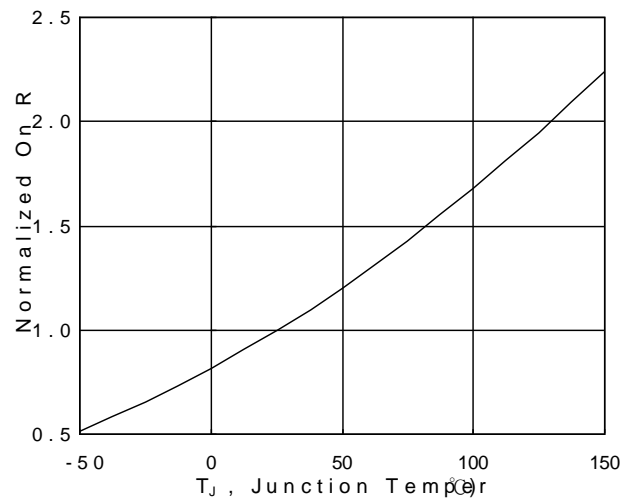


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

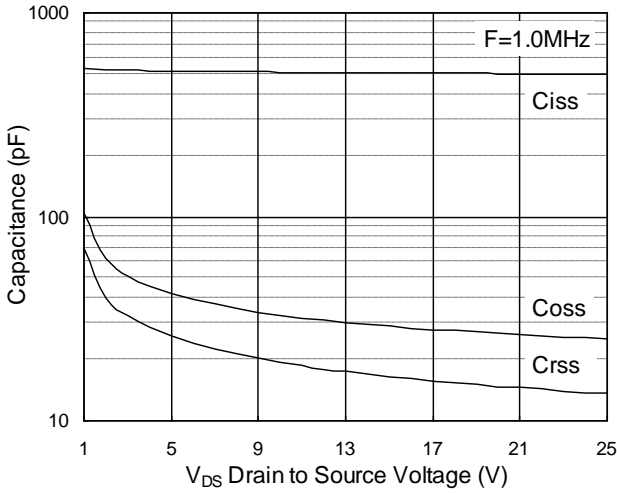


Fig.7 Capacitance

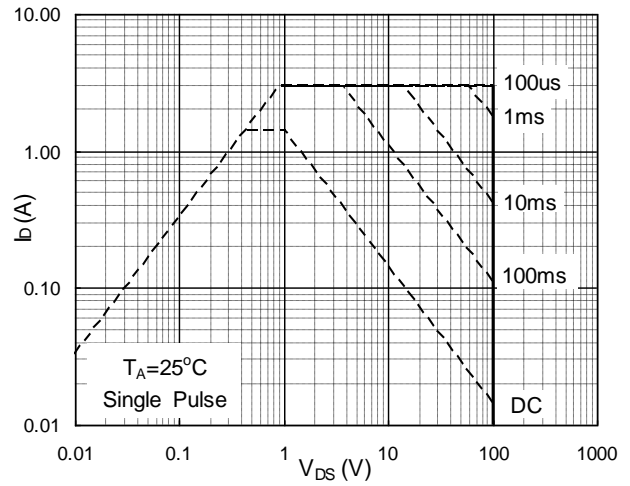


Fig.8 Safe Operating Area

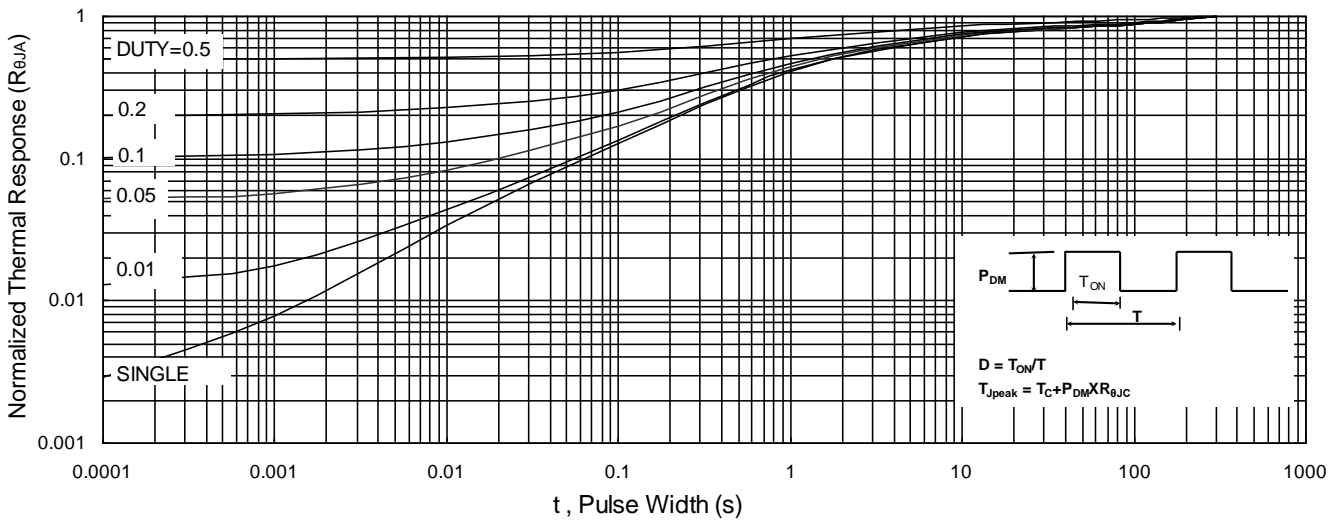


Fig.9 Normalized Maximum Transient Thermal Impedance

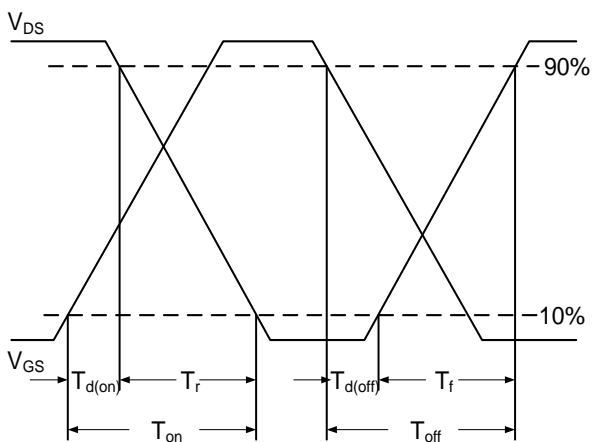


Fig.10 Switching Time Waveform

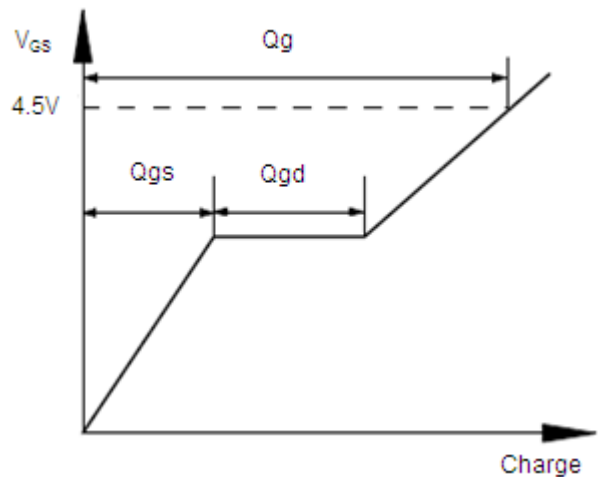


Fig.11 Gate Charge Waveform

SOP-8 Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	1.35	1.55	1.75	A₁	0.10	0.18	0.25
A₂	1.25	1.45	1.65	A₃	--	0.25	--
b_p	0.36	0.42	0.51	c	0.19	0.22	0.25
D	4.70	4.92	5.10	E	3.80	3.90	4.00
e	--	1.27	--	H_E	5.80	6.00	6.20
L	--	1.05	--	L_p	0.40	0.68	1.00
Q	0.60	0.65	0.73	v	--	0.25	--
w	--	0.25	--	y	--	0.10	--
Z	0.30	0.50	0.70	θ	0°		8°