

**Features**

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

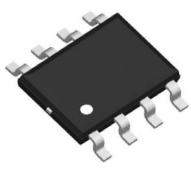
**Product Summary**



$V_{DS}$	30	V
$I_D$	10	A
$R_{DS(ON)}$ (at $V_{GS}=10V$ )	12	m $\Omega$
$R_{DS(ON)}$ (at $V_{GS}=4.5V$ )	16	m $\Omega$

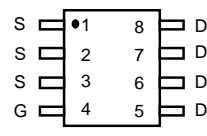
**Applications**

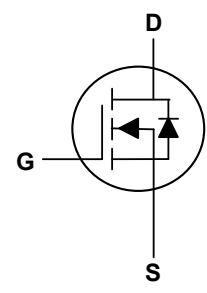
- High Frequency Point-of-Load, Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch



**SOP-8 Top View**

**Top View**





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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>1</sup>	$I_D$	10	A
Continuous Drain Current <sup>1</sup>	$I_D@T_C=100^{\circ}C$	6	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	50	A
Total Power Dissipation <sup>3</sup>	$P_D$	2.5	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-Case <sup>1</sup>	$R_{\theta JC}$	---	50	$^{\circ}C/W$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	30	---	---	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=10A$	---	8	12	$m\Omega$
		$V_{GS}=4.5V, I_D=5A$	---	11	16	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1	1.6	3	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	---	---	1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
Forward Transconductance	$g_{fs}$	$V_{DS}=5V, I_D=10A$	15	---	---	S
Total Gate Charge	$Q_g$	$V_{DS}=15V, V_{GS}=10V, I_D=5A$	---	13	---	nC
Gate-Source Charge	$Q_{gs}$		---	5.5	---	
Gate-Drain Charge	$Q_{gd}$		---	3.5	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=25V, R_G=6\Omega, V_{GS}=10V, I_D=5A$	---	30	---	ns
Rise Time	$T_r$		---	20	---	
Turn-Off Delay Time	$T_{d(off)}$		---	100	---	
Fall Time	$T_f$		---	80	---	
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$	---	1550	---	pF
Output Capacitance	$C_{oss}$		---	300	---	
Reverse Transfer Capacitance	$C_{rss}$		---	180	---	

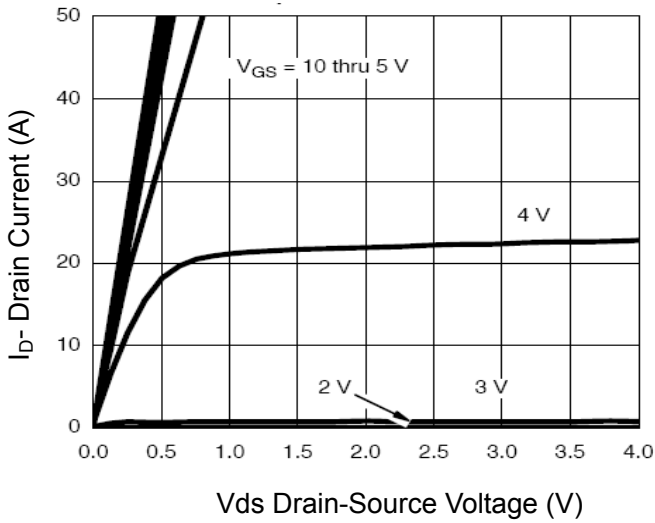
**Drain-Source Diode Characteristics**

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current <sup>2</sup>	$I_S$		---	---	10	A
Diode Forward Voltage <sup>1</sup>	$V_{SD}$	$V_{GS}=0V, I_S=10A, T_J=25^{\circ}\text{C}$	---	---	1.2	V

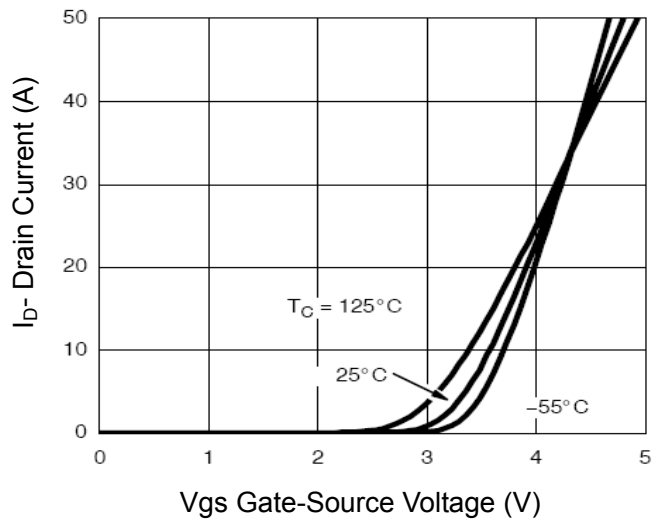
**Note:**

1. The data tested by surface mounted on a 1 inch<sup>2</sup> 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

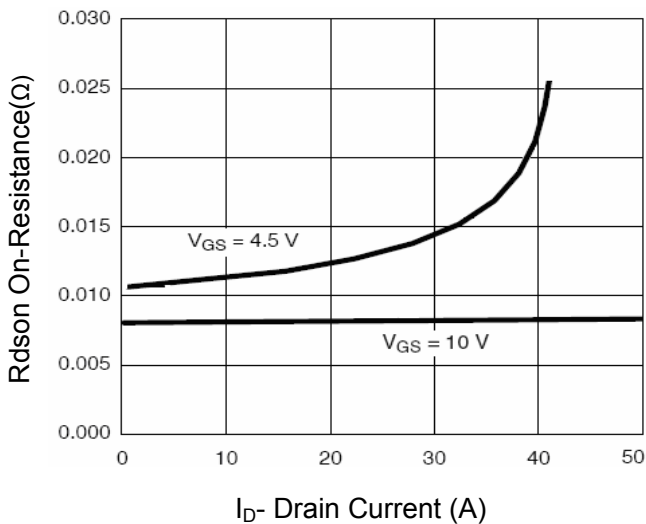
**Typical Characteristics**



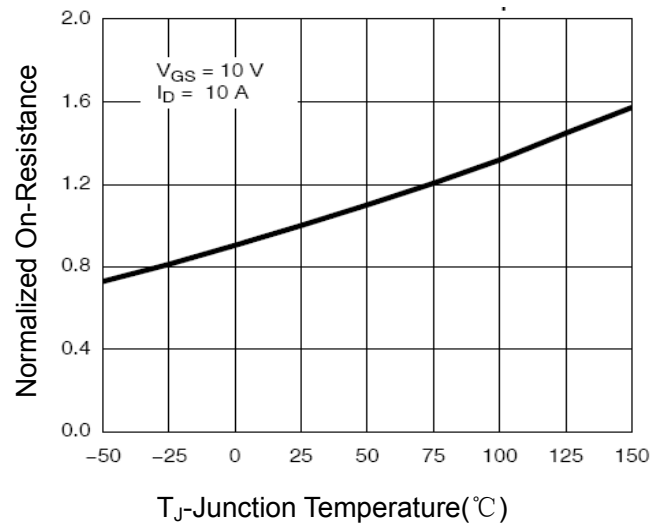
**Figure 1 Output Characteristics**



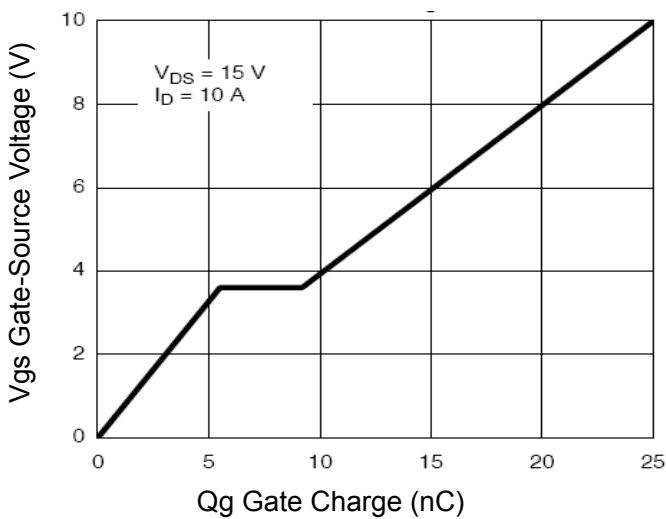
**Figure 2 Transfer Characteristics**



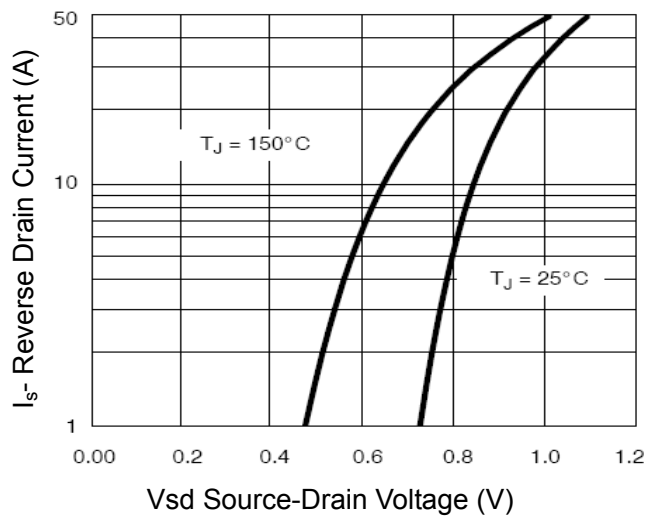
**Figure 3 Rdson- Drain Current**



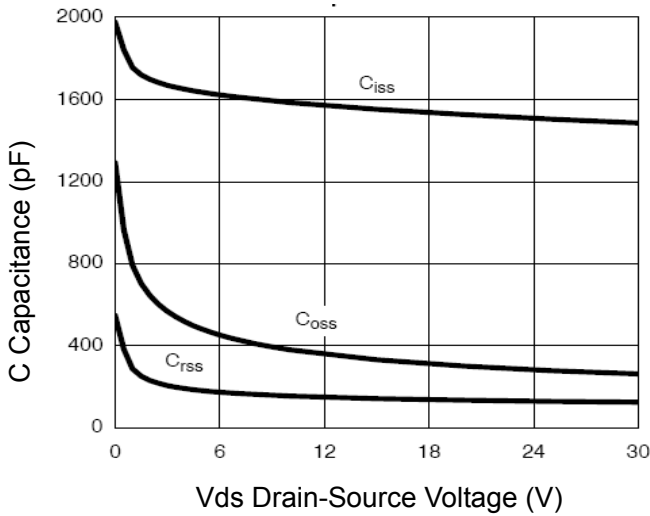
**Figure 4 Rdson-Junction Temperature**



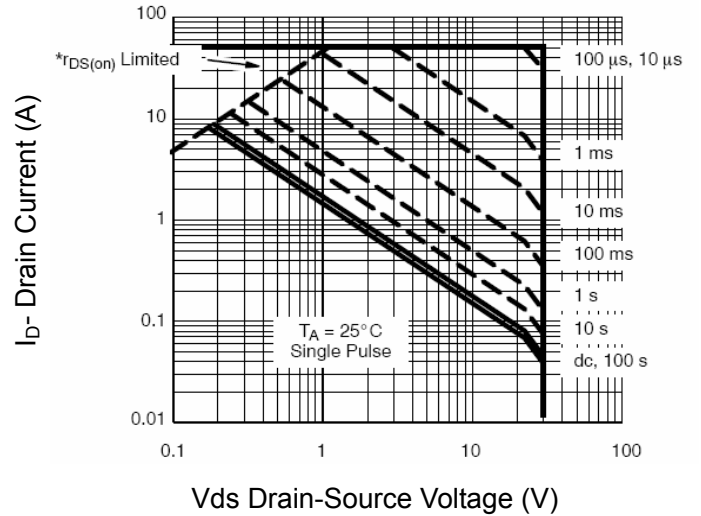
**Figure 5 Gate Charge**



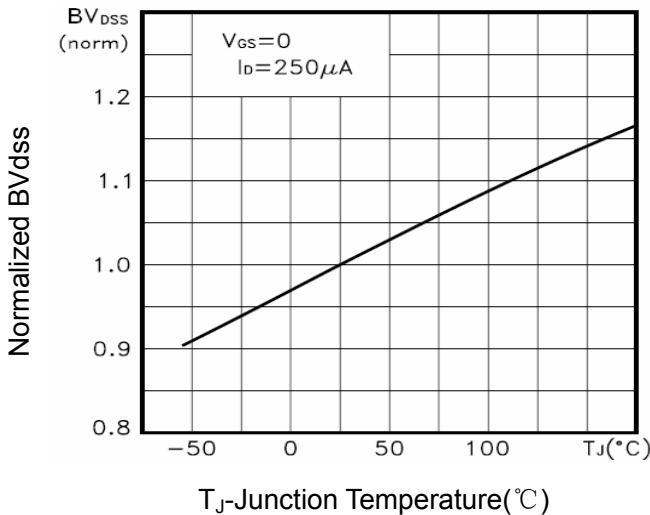
**Figure 6 Source- Drain Diode Forward**



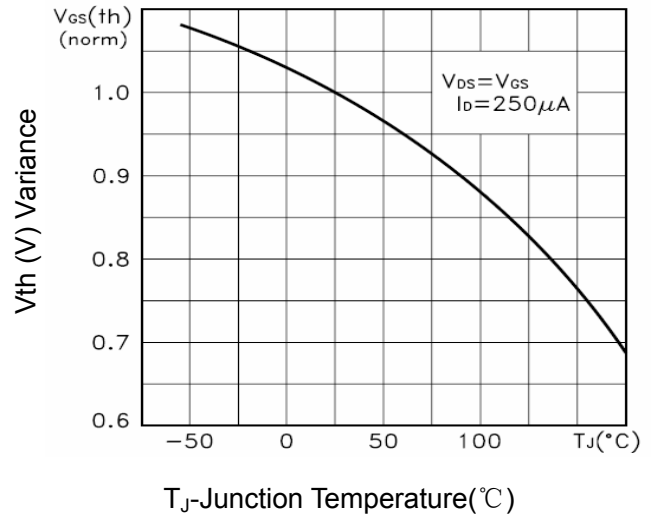
**Figure 7 Capacitance vs Vds**



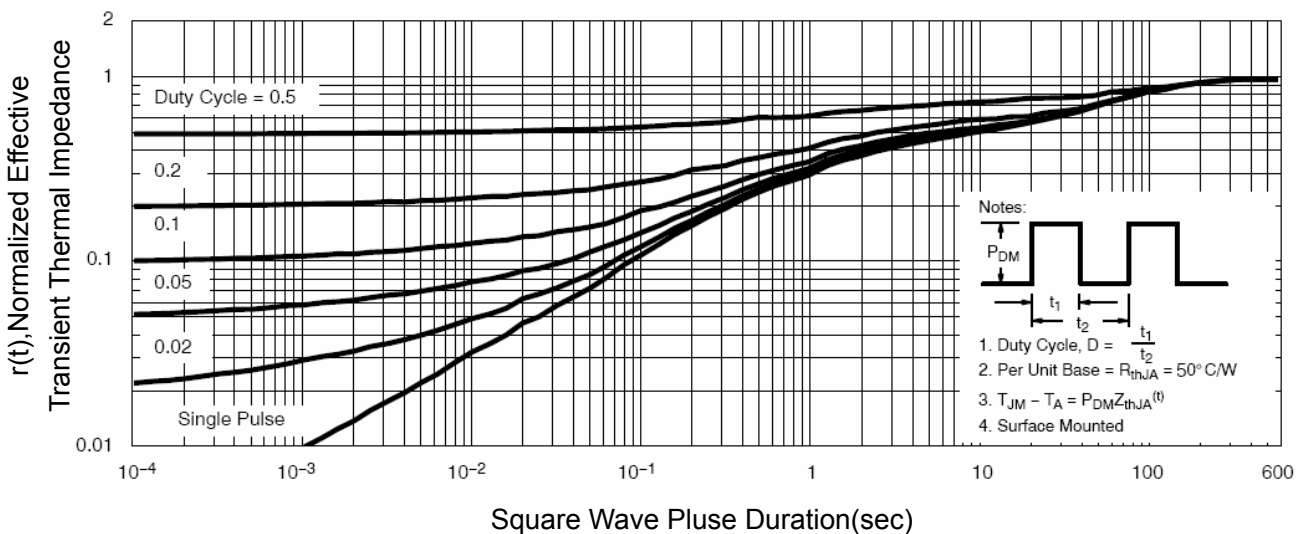
**Figure 8 Safe Operation Area**



**Figure 9 BV<sub>DSS</sub> vs Junction Temperature**



**Figure 10 V<sub>GS(th)</sub> vs Junction Temperature**



**Figure 11 Normalized Maximum Transient Thermal Impedance**

**SOP-8 Package Outline Dimensions**



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
<b>A</b>	1.35	1.55	1.75	<b>A<sub>1</sub></b>	0.10	0.18	0.25
<b>A<sub>2</sub></b>	1.25	1.45	1.65	<b>A<sub>3</sub></b>	--	0.25	--
<b>b<sub>p</sub></b>	0.36	0.42	0.51	<b>c</b>	0.19	0.22	0.25
<b>D</b>	4.70	4.92	5.10	<b>E</b>	3.80	3.90	4.00
<b>e</b>	--	1.27	--	<b>H<sub>E</sub></b>	5.80	6.00	6.20
<b>L</b>	--	1.05	--	<b>L<sub>p</sub></b>	0.40	0.68	1.00
<b>Q</b>	0.60	0.65	0.73	<b>v</b>	--	0.25	--
<b>w</b>	--	0.25	--	<b>y</b>	--	0.10	--
<b>Z</b>	0.30	0.50	0.70	<b>θ</b>	0°		8°