

## Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

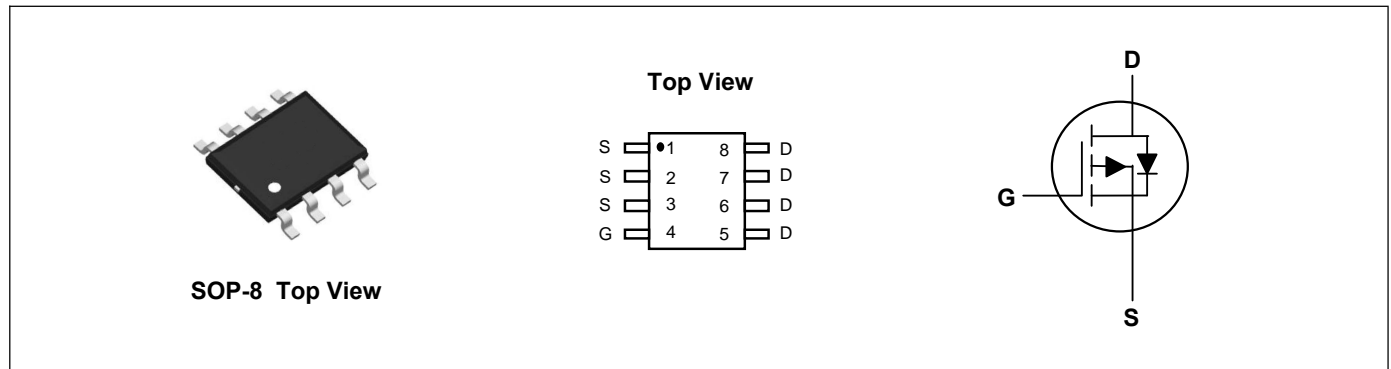
## Applications

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

## Product Summary



$V_{DS}$	-100	V
$I_D$	-8	A
$R_{DS(ON)}$ (at $V_{GS}=-10V$ )	110	m $\Omega$
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$ )	125	m $\Omega$



## Absolute Maximum Ratings ( $T_C=25^\circ C$ , unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	$V_{DS}$	-100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>1</sup>	$I_D@T_C=25^\circ C$	-8	A
Continuous Drain Current <sup>1</sup>	$I_D@T_C=100^\circ C$	-3.85	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	-18	A
Single Pulse Avalanche Energy <sup>3</sup>	$E_{AS}$	56	mJ
Avalanche Current	$I_{AS}$	3.1	A
Total Power Dissipation	$P_D@T_C=25^\circ C$	3.2	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 <sup>1</sup>	$R_{\theta JA}$	---	59	$^\circ C/W$
Thermal Resistance Junction-Case <sup>1</sup>	$R_{\theta JC}$	---	16	$^\circ C/W$

**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	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-5A$	---	85	110	$m\Omega$
		$V_{GS}=-4.5V, I_D=-3A$	---	95	125	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.2	---	-2.5	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=-100V, V_{GS}=0V$	---	---	-50	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
Forward Transconductance	gfs	$V_{DS}=-10V, I_D=-8A$	---	24	---	S
Total Gate Charge	$Q_g$	$V_{DS}=-50V, V_{GS}=-10V, I_D=-5A$	---	20	---	nC
Gate-Source Charge	$Q_{gs}$		---	4	---	
Gate-Drain Charge	$Q_{gd}$		---	4.5	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=-50V, V_{GS}=-10V, R_G=3.3\Omega, I_D=-5A$	---	10	---	ns
Rise Time	$T_r$		---	28	---	
Turn-Off Delay Time	$T_{d(off)}$		---	72	---	
Fall Time	$T_f$		---	79	---	
Input Capacitance	$C_{iss}$	$V_{DS}=-25V, V_{GS}=0V, f=1\text{MHz}$	---	1050	---	pF
Output Capacitance	$C_{oss}$		---	118	---	
Reverse Transfer Capacitance	$C_{rss}$		---	25	---	

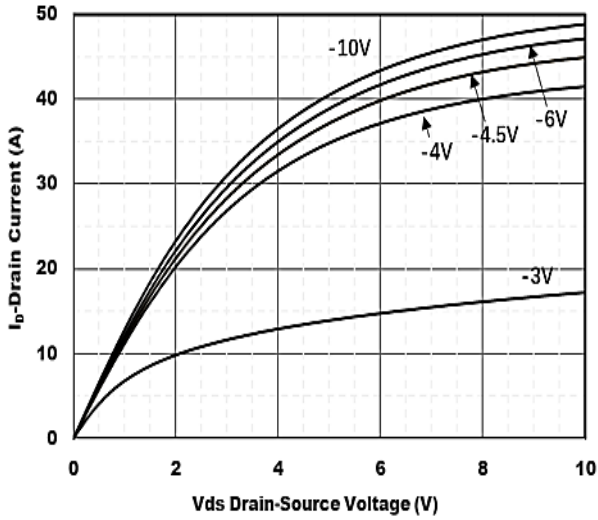
**Drain-Source Diode Characteristics**

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage <sup>2</sup>	$V_{SD}$	$V_{GS}=0V, I_S=-1A, T_J=25^{\circ}\text{C}$	---	---	-1.2	V
Reverse Recovery Time	$t_{rr}$	$I_F=-8A, di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	---	80	---	nS
Reverse Recovery Charge	$Q_{rr}$		---	140	---	nC

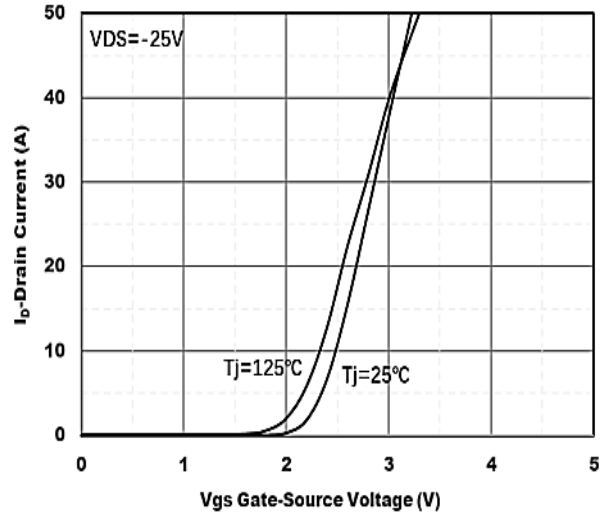
**Note:**

- 1.The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 20Z copper.
- 2.The data tested by pulsed , pulse width  $\leq 300\mu s$  , duty cycle  $\leq 2\%$
- 3.The EAS data shows Max. rating . The test condition is  $V_{DD}=-50V, V_{GS}=-10V, L=0.1\text{mH}$

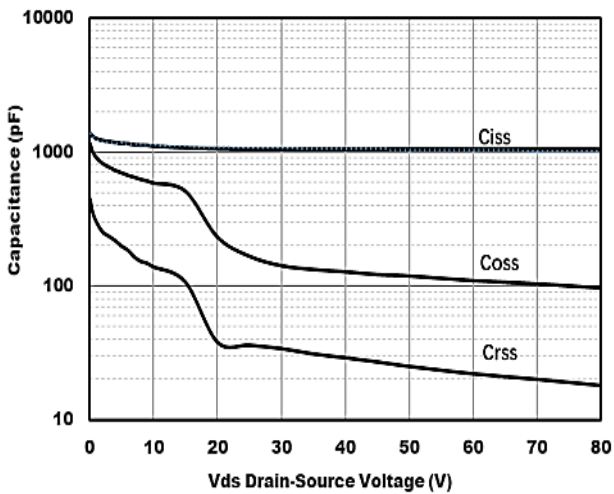
**Typical Characteristics**



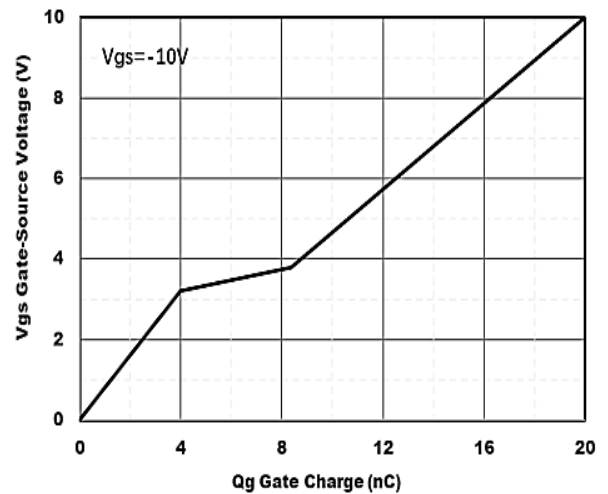
**Figure1. Output Characteristics**



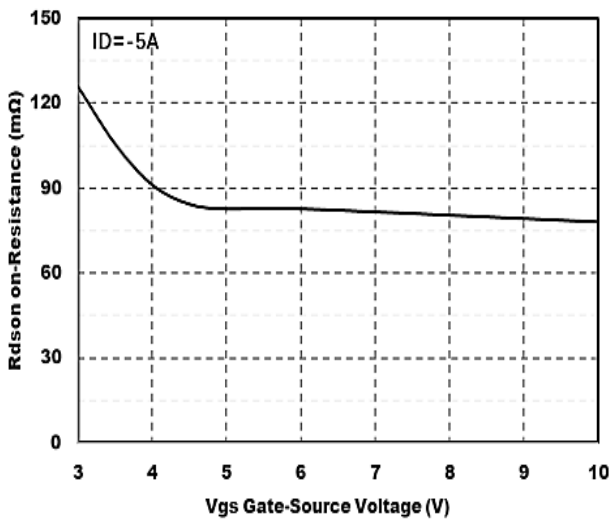
**Figure2. Transfer Characteristics**



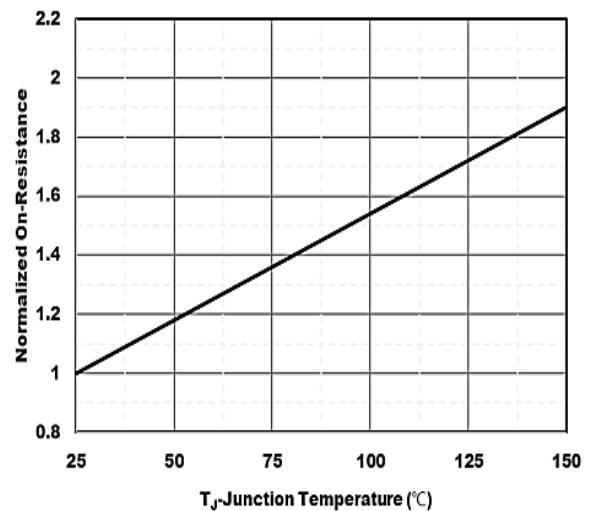
**Figure3. Capacitance Characteristics**



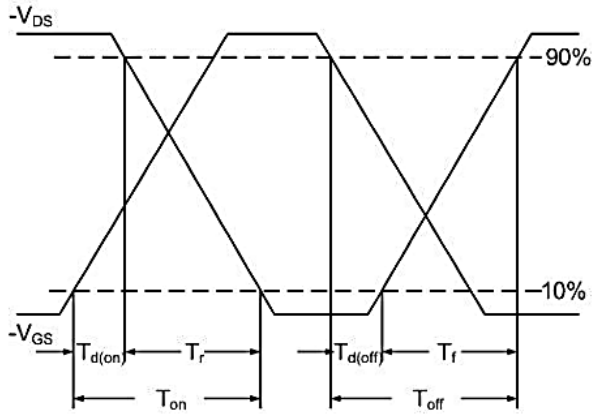
**Figure4. Gate Charge**



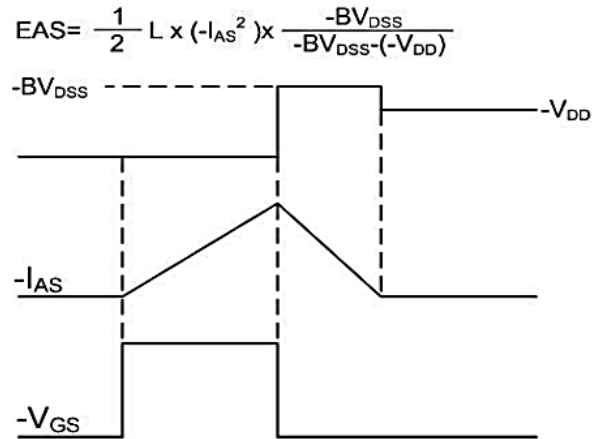
**Figure5. : On-Resistance vs. Gate to Source Voltage**



**Figure6. Normalized On-Resistance**



**Figure7. Switching Time Waveform**



**Figure8. Unclamped Inductive Waveform**

**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°