

Features

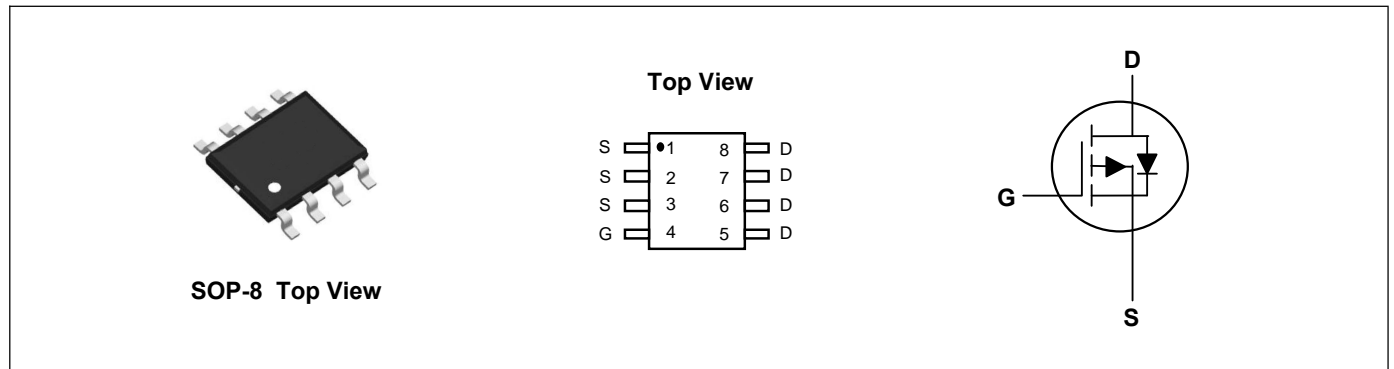
- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

Product Summary


V_{DS}	-40	V
I_D	-11	A
$R_{DS(ON)}$ (at $V_{GS}=-10V$)	16	m Ω
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$)	22	m Ω

Applications

- High Frequency Point-of-Load, Synchronous Buck Converter for MB/NB/UMPC/VGA
- Networking DC-DC Power System
- LCD/LED Back Light


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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	± 25	V
Continuous Drain Current ¹	$I_D@T_A=25^{\circ}C$	-11	A
Continuous Drain Current ¹	$I_D@T_A=70^{\circ}C$	-9	A
Pulsed Drain Current ²	I_{DM}	-44	A
Single Pulse Avalanche Energy ³	EAS	54	mJ
Avalanche Current	I_{AS}	-33	A
Total Power Dissipation ⁴	$P_D@T_A=25^{\circ}C$	3.1	W
Total Power Dissipation ⁴	$P_D@T_A=70^{\circ}C$	2.0	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 ($t \leq 10s$)	$R_{\theta JA}$	---	40	$^{\circ}C/W$
Thermal Resistance Junction-Ambient ¹ (Steady State)		---	75	$^{\circ}C/W$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	---	24	$^{\circ}C/W$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-40	---	---	V
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-11A$	---	13	16	m Ω
		$V_{GS}=-4.5V, I_D=-7A$	---	18	22	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.4	-1.9	-2.4	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-32V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	---	---	-1	μA
		$V_{DS}=-32V, V_{GS}=0V, T_J=85^{\circ}\text{C}$	---	---	-30	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 25V, V_{DS}=0V$	---	---	± 100	nA
Gate Resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	2.3	---	Ω
Total Gate Charge	Q_g	$V_{DS}=-20V, V_{GS}=-10V, I_D=-11A$	---	32	---	nC
Gate-Source Charge	Q_{gs}		---	5.2	---	
Gate-Drain Charge	Q_{gd}		---	8	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=-20V, V_{GS}=-10V, R_G=6\Omega, I_D=-1A, R_L=20\Omega$	---	14	---	ns
Rise Time	T_r		---	12	---	
Turn-Off Delay Time	$T_{d(off)}$		---	41	---	
Fall Time	T_f		---	22	---	
Input Capacitance	C_{iss}	$V_{DS}=-20V, V_{GS}=0V, f=1\text{MHz}$	---	1500	---	pF
Output Capacitance	C_{oss}		---	235	---	
Reverse Transfer Capacitance	C_{rss}		---	180	---	

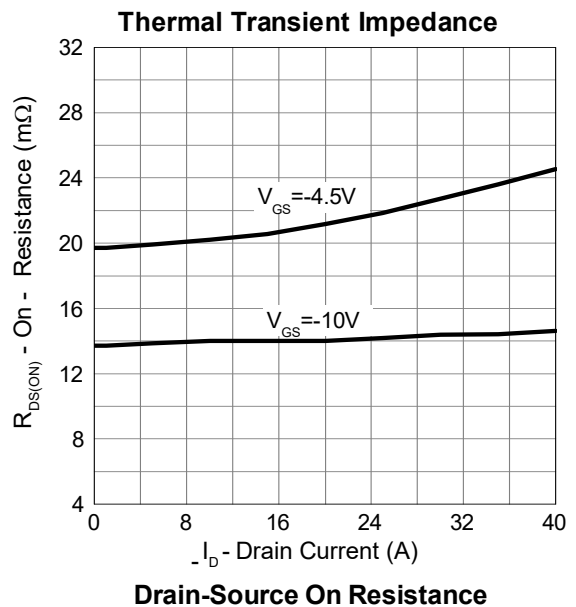
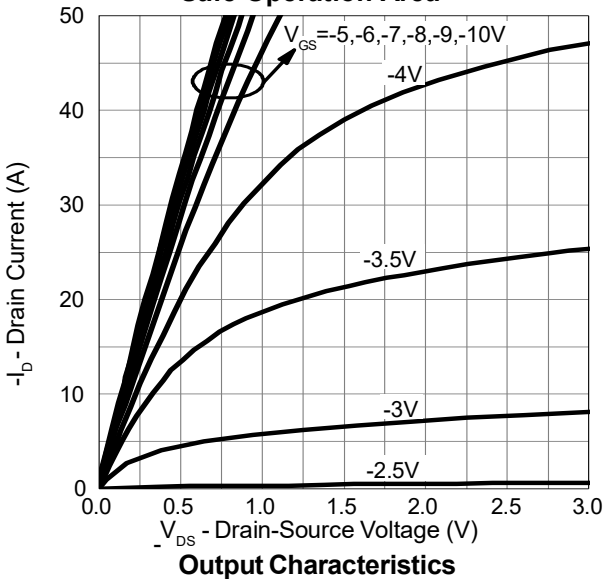
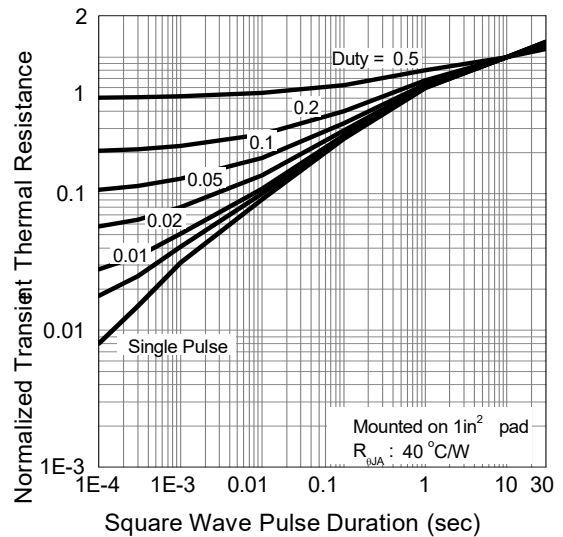
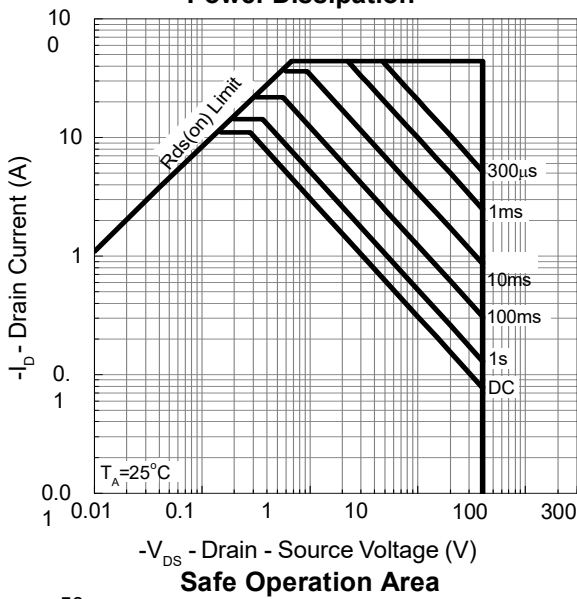
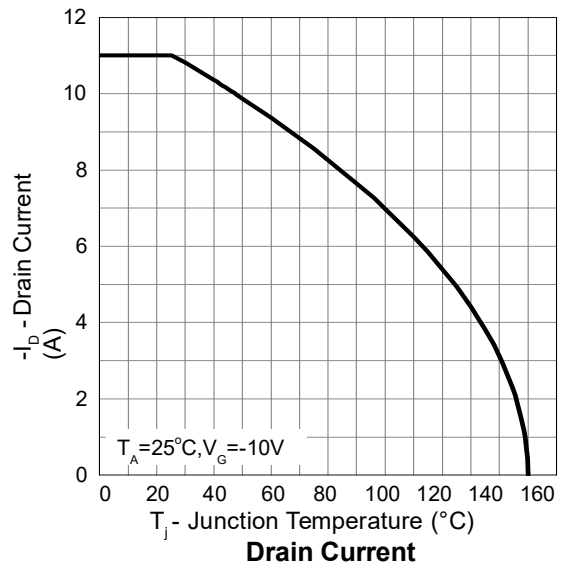
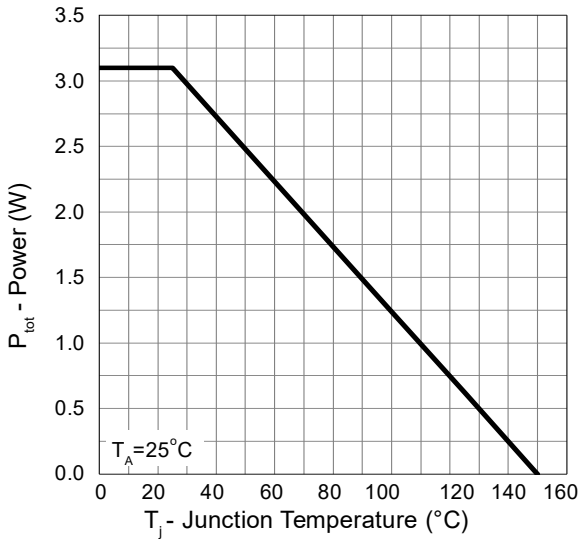
Drain-Source Diode Characteristics

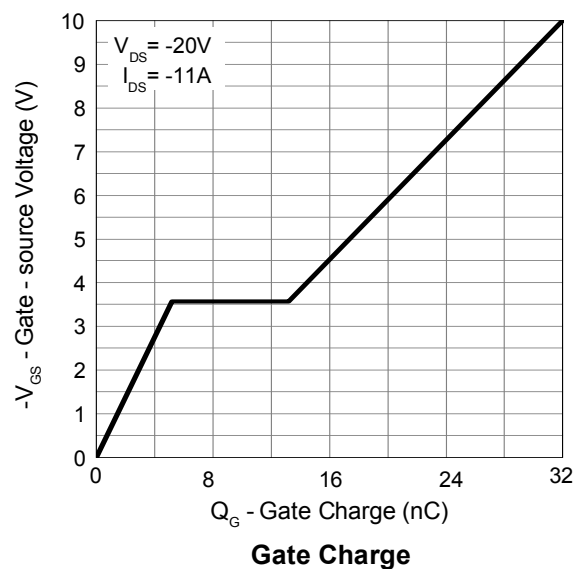
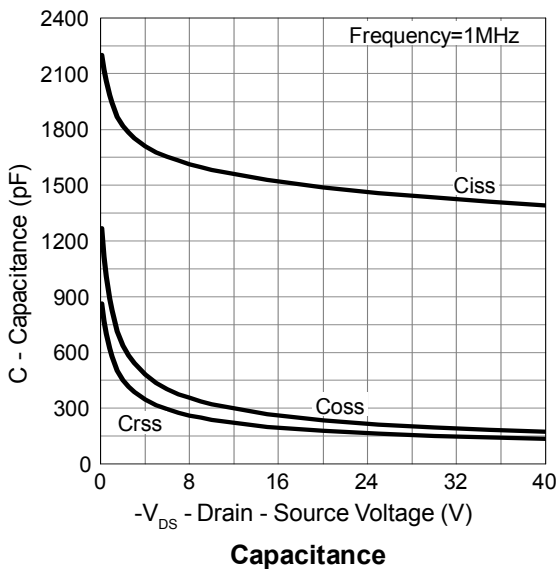
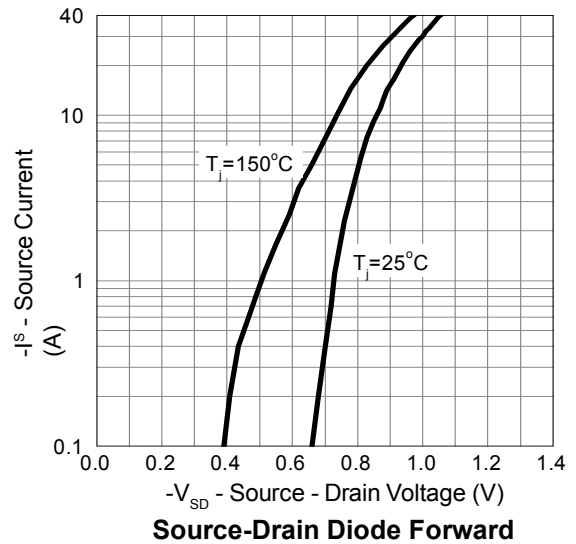
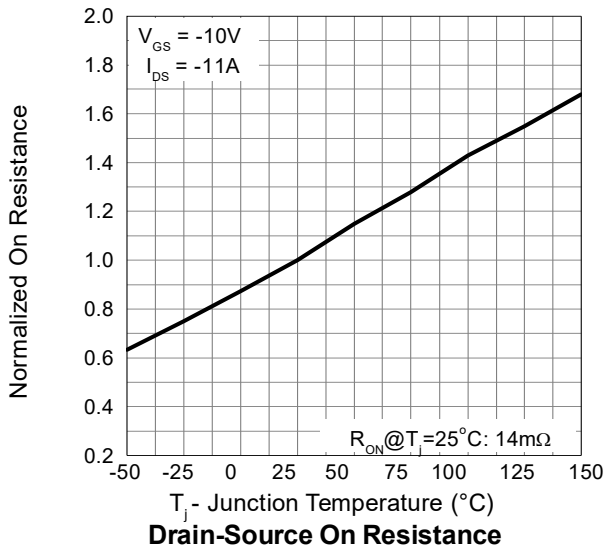
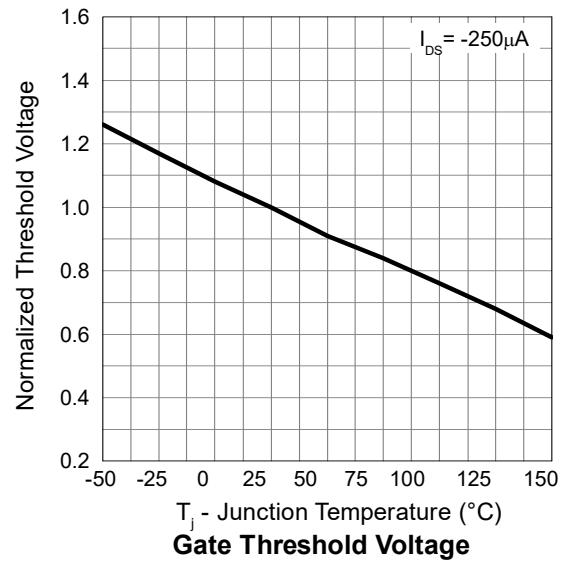
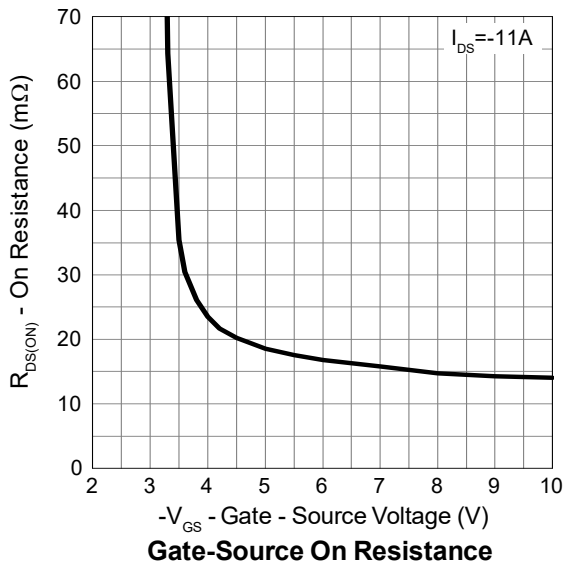
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ^{1,5}	I_S	$V_G=V_D=0V, \text{Force Current}$	---	---	-3	A
Diode Forward Voltage ²	V_{SD}	$V_{GS}=0V, I_S=-1A, T_J=25^{\circ}\text{C}$	---	-0.75	-1	V
Reverse Recovery Time	t_{rr}	$I_F=-11A, di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	---	24	---	nS
Reverse Recovery Charge	Q_{rr}		---	18	---	nC

Note:

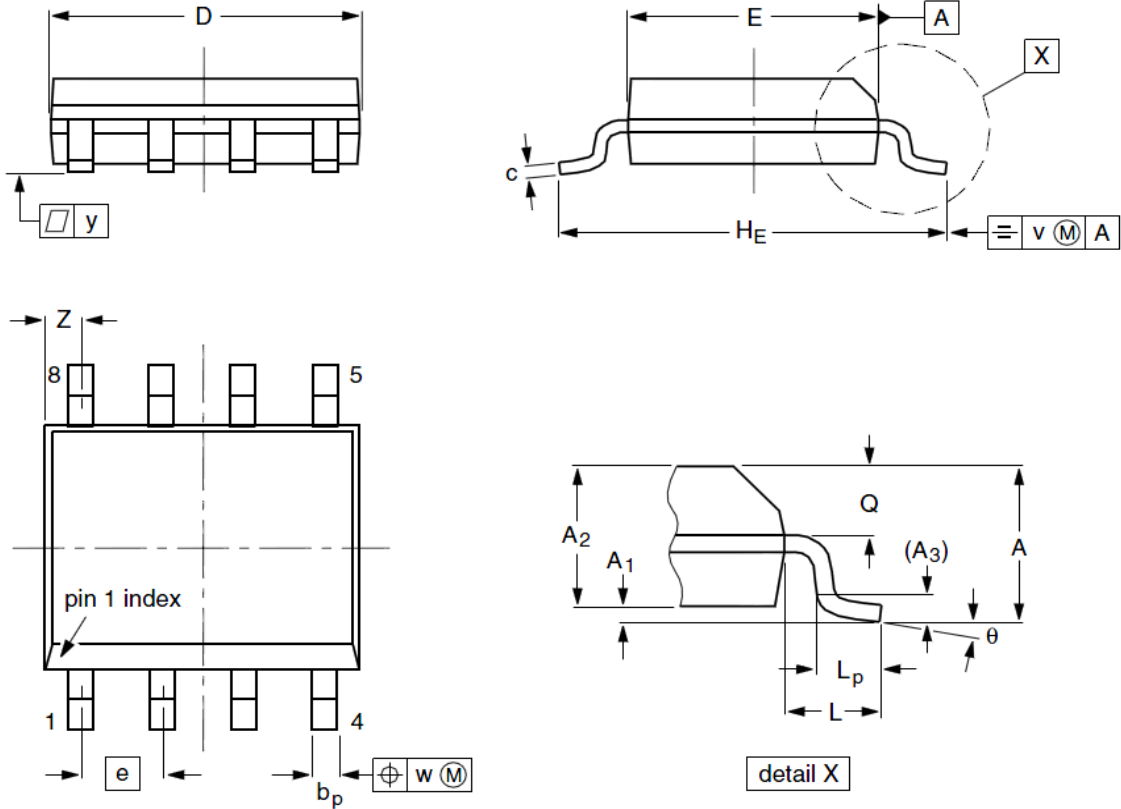
- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3.The EAS data shows Max. rating . The test condition is $V_{DD}=-25V, V_{GS}=-10V, L=0.1\text{mH}$
- 4.The power dissipation is limited by 150 $^{\circ}\text{C}$ junction temperature
- 5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics





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°