

Features

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

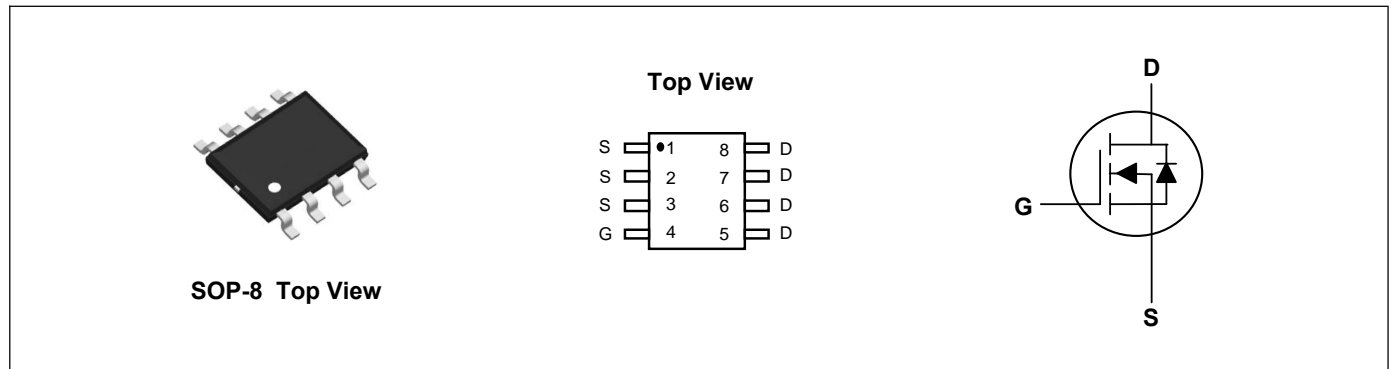
Applications

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

Product Summary



V_{DS}	100	V
I_D	12	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	13	m Ω
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	15	m Ω



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	$I_D@T_C=25^{\circ}C$	12	A
Continuous Drain Current	$I_D@T_C=100^{\circ}C$	8	A
Pulsed Drain Current	I_{DM}	48	A
Single Pulse Avalanche Energy ³	EAS	152	mJ
Total Power Dissipation	$P_D@T_C=25^{\circ}C$	3.5	W
Derating factor		0.028	W/ $^{\circ}C$
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	$R_{\theta JA}$	---	36	$^{\circ}C/W$

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	100	---	---	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =12A	---	9.9	13	mΩ
		V _{GS} =4.5V, I _D =12A	---	11.5	15	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	1.0	1.7	2.2	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V, T _J =25°C	---	---	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
Forward Transconductance	g _{fs}	V _{DS} =10V, I _D =12A	---	30	---	S
Total Gate Charge	Q _g	V _{DS} =50V, V _{GS} =10V, I _D =12A	---	45	---	nC
Gate-Source Charge	Q _{gs}		---	11.6	---	
Gate-Drain Charge	Q _{gd}		---	6	---	
Turn-On Delay Time	T _{d(on)}	V _{DD} =50V, I _D =12A, V _{GS} =10V, R _G =1.6Ω	---	11	---	ns
Rise Time	T _r		---	7	---	
Turn-Off Delay Time	T _{d(off)}		---	30	---	
Fall Time	T _f		---	4	---	
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=1MHz	---	3050	---	pF
Output Capacitance	C _{oss}		---	274	---	
Reverse Transfer Capacitance	C _{rss}		---	17.8	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ¹	I _S		---	---	12	A
Diode Forward Voltage ²	V _{SD}	V _{GS} =0V, I _S =12A, T _J =25°C	---	---	1.2	V
Reverse Recovery Time	t _{rr}	I _F =12A, di/dt=100A/μs, T _J =25°C	---	78	---	nS
Reverse Recovery Charge	Q _{rr}		---	149	---	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 ≤ 300us, duty cycle ≤ 2%
- 3.The EAS data shows Max. rating. The test condition is V_{DD}=50V, V_{GS}=10V, L=1mH, R_G=25Ω
- 4.The power dissipation is limited by 150°C junction temperature

Typical Characteristics

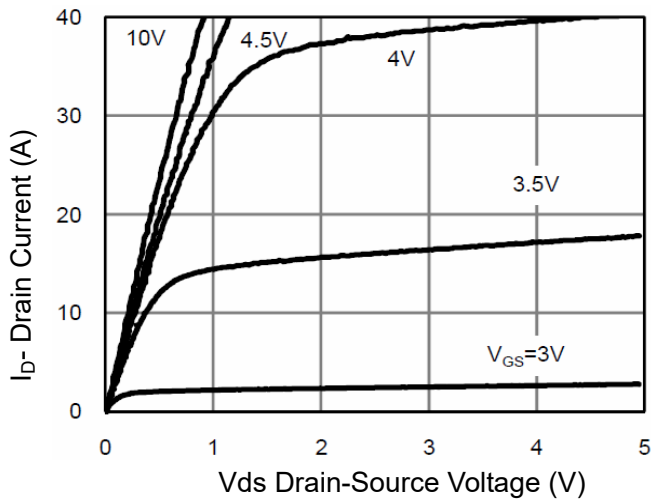


Figure 1 Output Characteristics

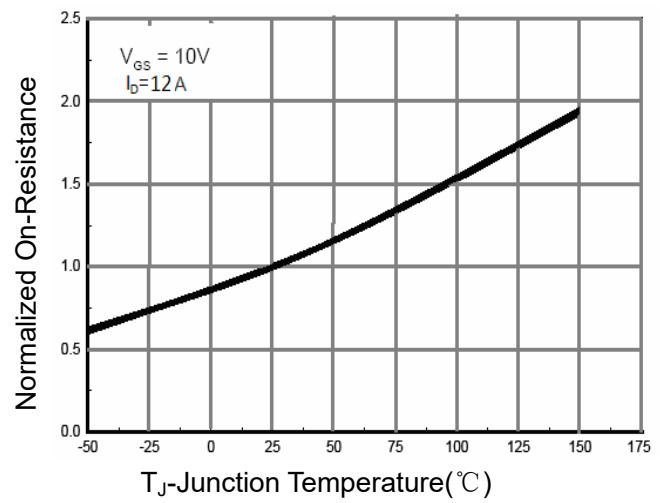


Figure 4 Rdson-Junction Temperature

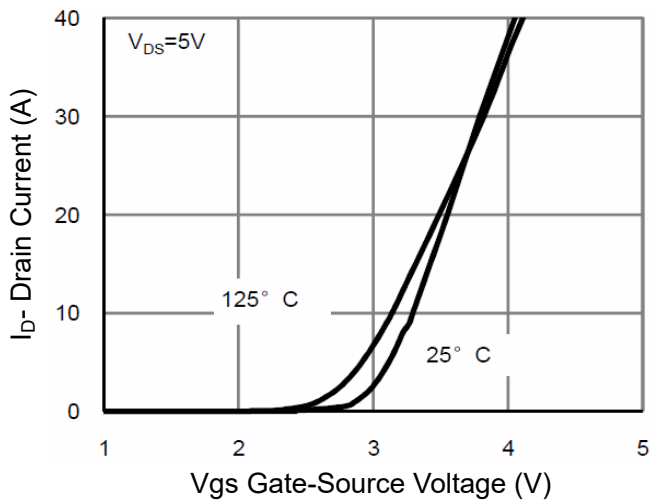


Figure 2 Transfer Characteristics

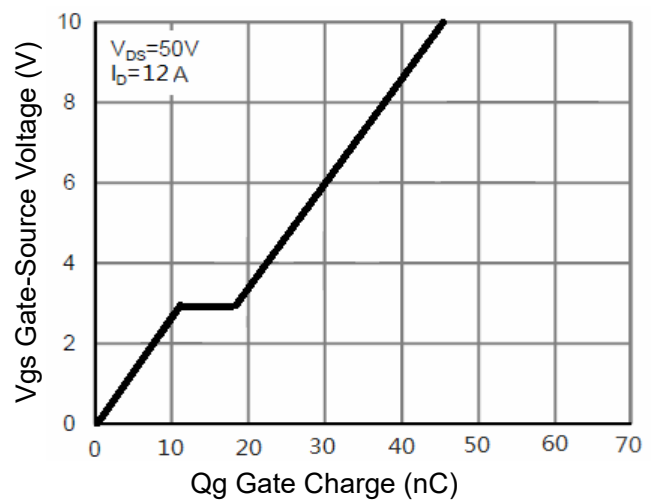


Figure 5 Gate Charge

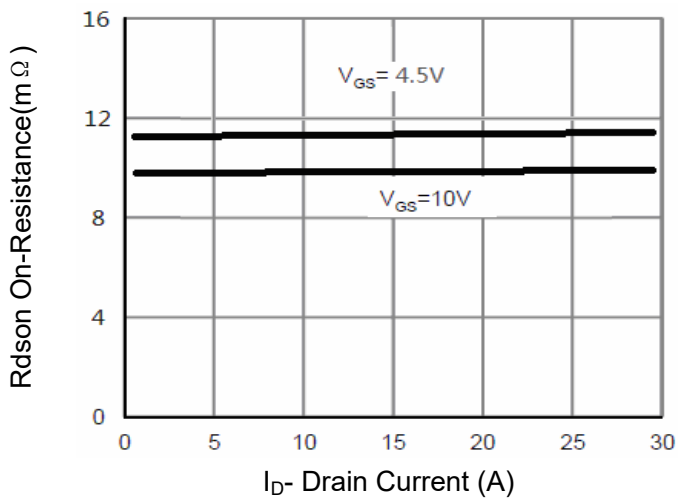


Figure 3 Rdson- Drain Current

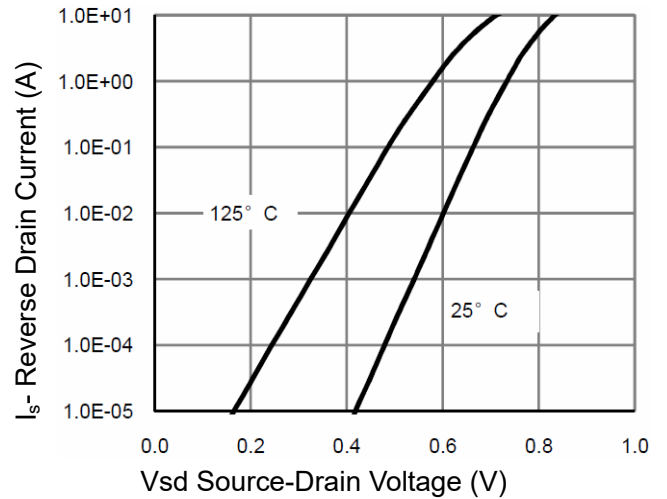


Figure 6 Source- Drain Diode Forward

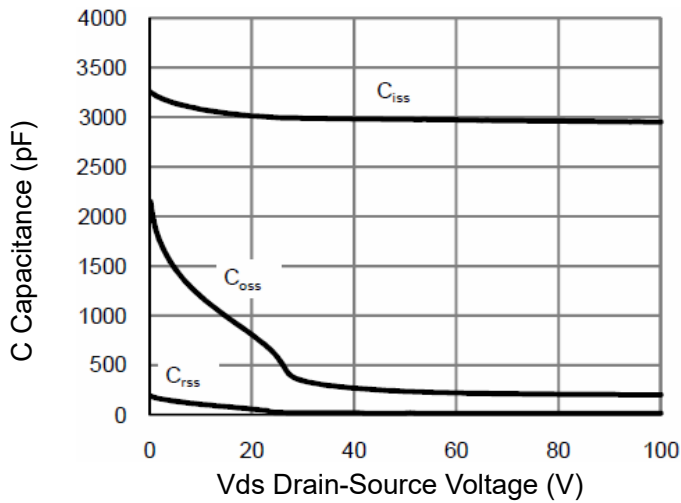


Figure 7 Capacitance vs Vds

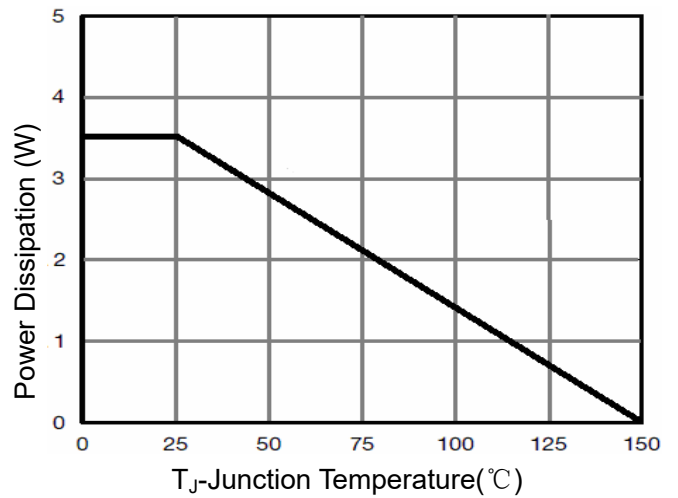


Figure 9 Power De-rating

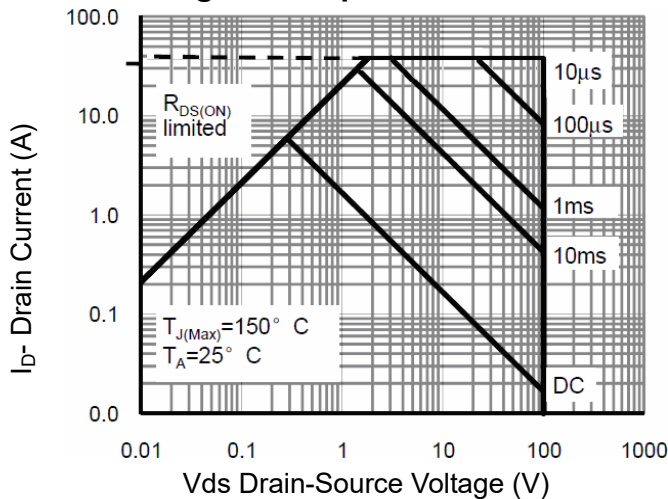


Figure 8 Safe Operation Area

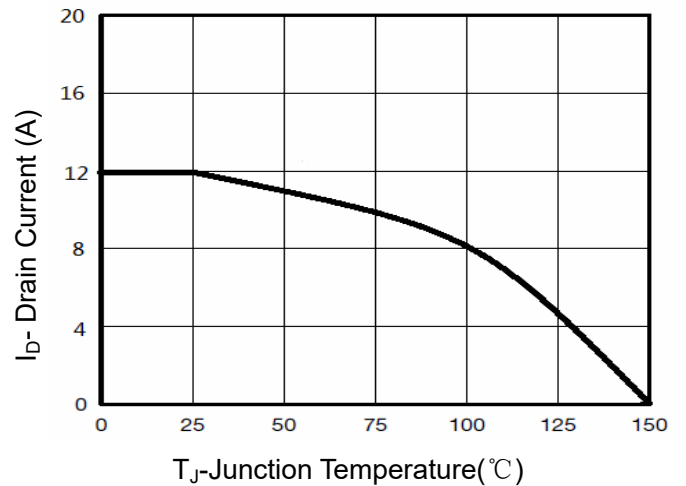


Figure 10 Current De-rating

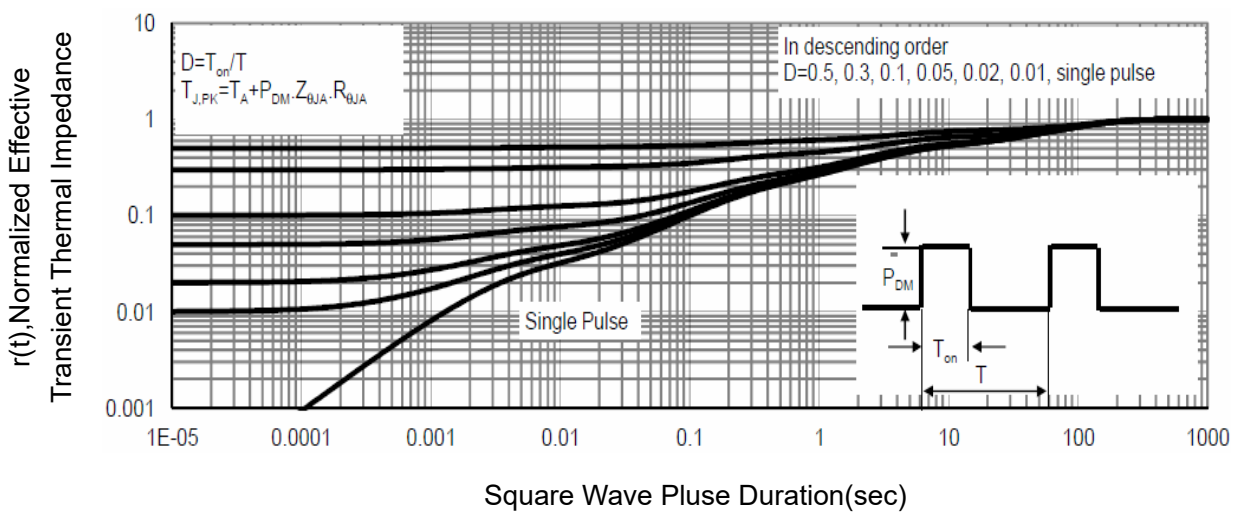
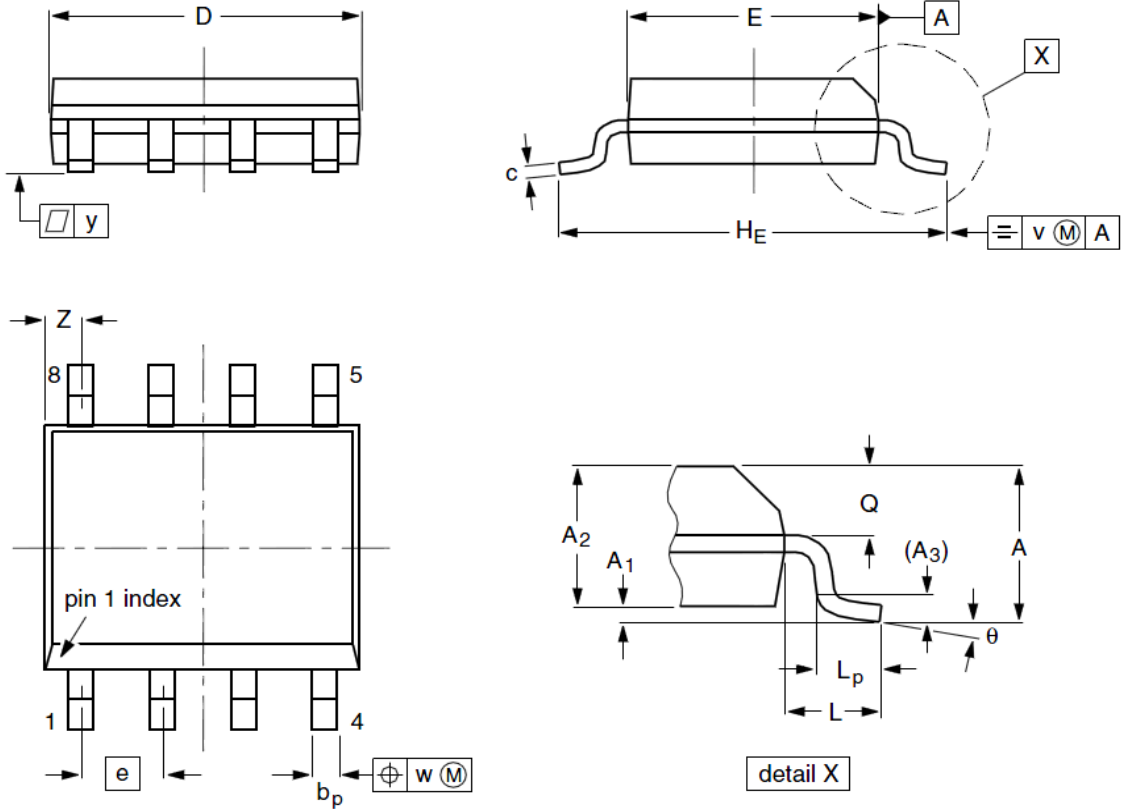


Figure 11 Normalized Maximum Transient Thermal Impedance

SOP-8 Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
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°