

Features

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

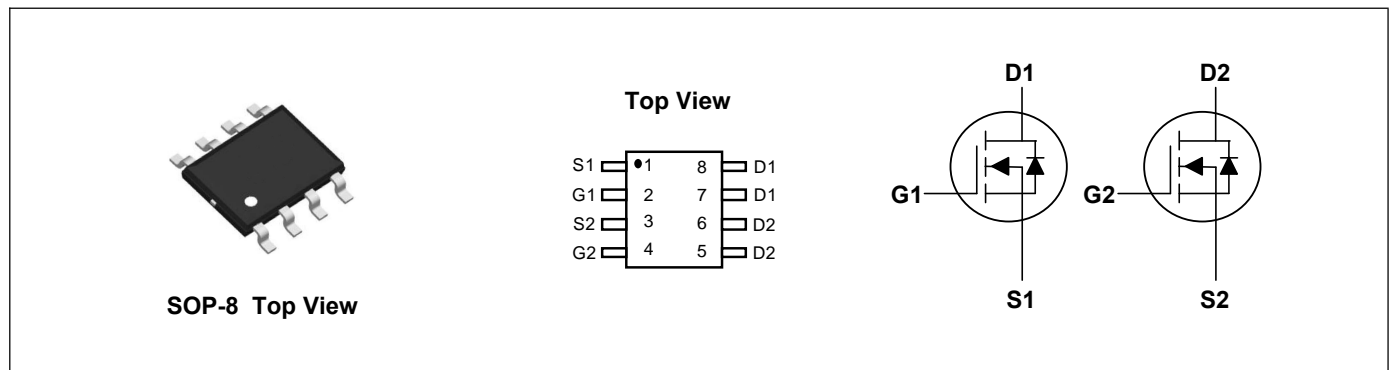
Applications

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

Product Summary



V_{DS}	30	V
I_D	8	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	12	m Ω
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	16	m Ω



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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	I_D	8	A
Continuous Drain Current ¹	I_D	6.4	A
Pulsed Drain Current ²	I_{DM}	20	A
Single Pulse Avalanche Energy ³	EAS	16	mJ
Avalanche Current	I_{AS}	18	A
Total Power Dissipation ⁴	P_D	1.3	W
Total Power Dissipation ⁴	P_D	0.8	W
Storage Temperature Range	T_{STG}	-55 to 150	$^\circ\text{C}$
Operating Junction Temperature Range	T_J	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	---	100	$^\circ\text{C/W}$

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	30	---	---	V
Static Drain-Source On-Resistance ²	R _{DS(ON)}	V _{GS} =10V, I _D =10A	---	10	12	mΩ
		V _{GS} =4.5V, I _D =5A	---	12	16	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	1.1	1.6	2.1	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =24V, 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} =5V, I _D =5A	---	2.5	---	S
Gate Resistance	R _g	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	3.2	---	Ω
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =10V, I _D =10A	---	20.6	---	nC
Gate-Source Charge	Q _{gs}		---	2.3	---	
Gate-Drain Charge	Q _{gd}		---	4.9	---	
Turn-On Delay Time	T _{d(on)}	V _{DD} =15V, V _{GS} =10V, R _G =6Ω, I _D =1A	---	18	---	ns
Rise Time	T _r		---	31	---	
Turn-Off Delay Time	T _{d(off)}		---	31	---	
Fall Time	T _f		---	17	---	
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	873	---	pF
Output Capacitance	C _{oss}		---	113	---	
Reverse Transfer Capacitance	C _{rss}		---	105	---	

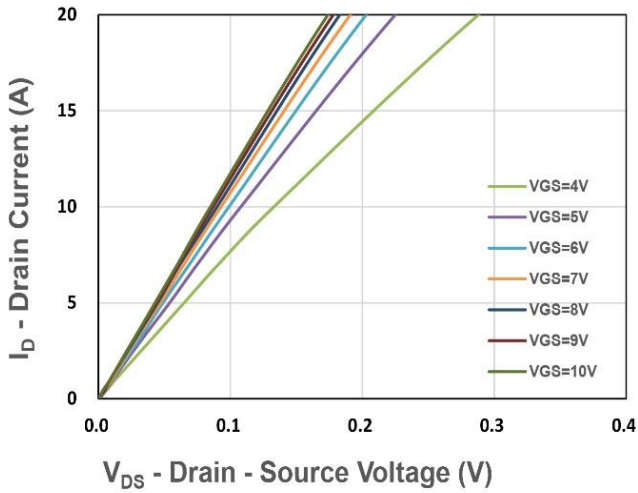
Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage ²	V _{SD}	V _{GS} =0V, I _S =1A, T _J =25°C	---	0.7	1.1	V
Reverse Recovery Time	t _{rr}	I _F =1A, di/dt=100A/μs, T _J =25°C	---	25.5	---	nS
Reverse Recovery Charge	Q _{rr}		---	10.8	---	nC

Note:

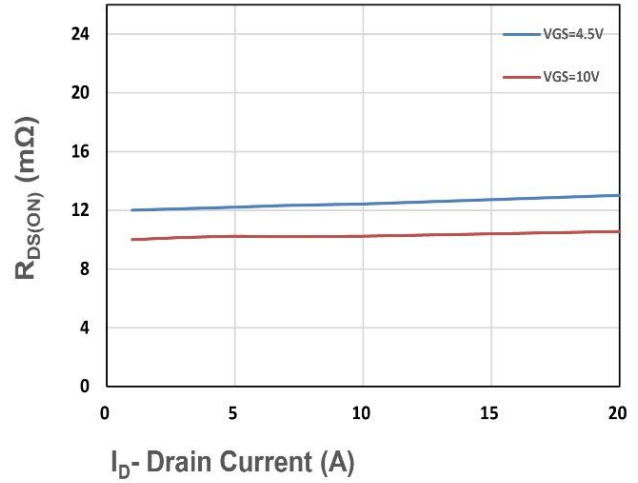
- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%
- 3.The EAS data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH
- 4.The power dissipation is limited by 150°C junction temperature

Typical Characteristics



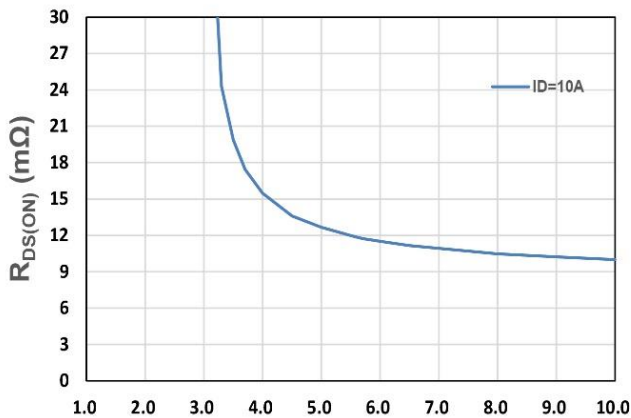
V_{DS} - Drain - Source Voltage (V)

Figure 1. Output Characteristics



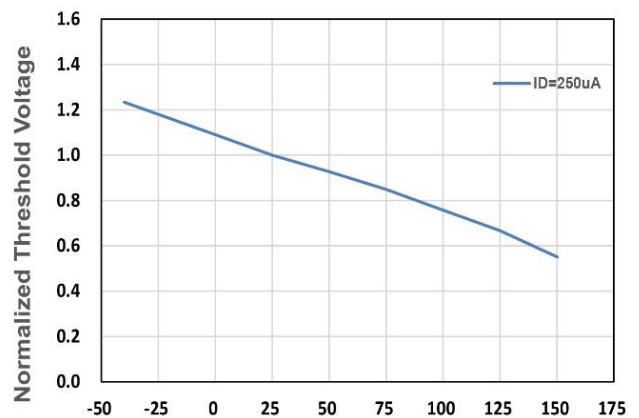
I_D - Drain Current (A)

Figure 2. On-Resistance vs. I_D



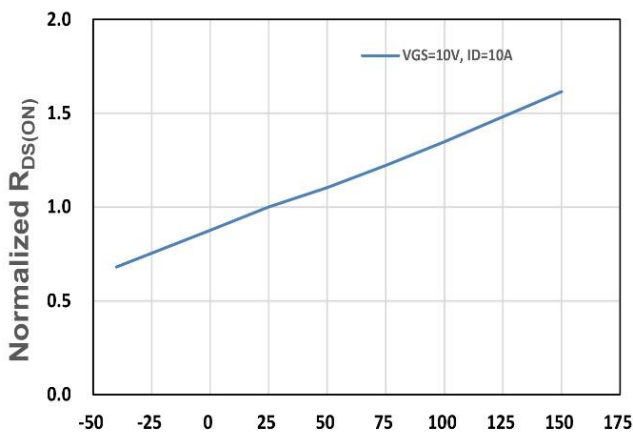
V_{GS} - Gate - Source Voltage (V)

Figure 3. On-Resistance vs. V_{GS}



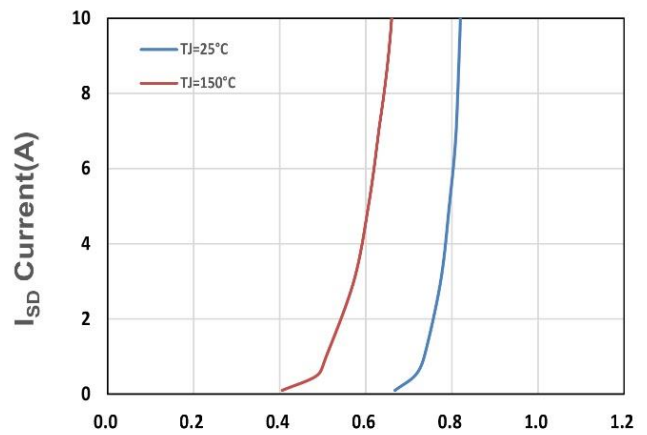
T_j , Junction Temperature($^{\circ}C$)

Figure 4. Gate Threshold Voltage



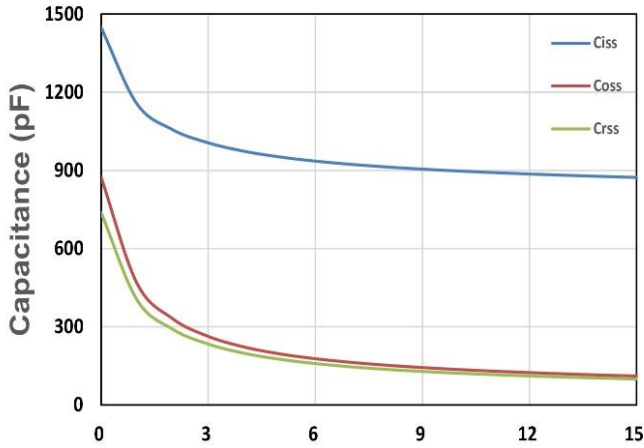
T_j , Junction Temperature($^{\circ}C$)

Figure 5. Drain-Source On Resistance

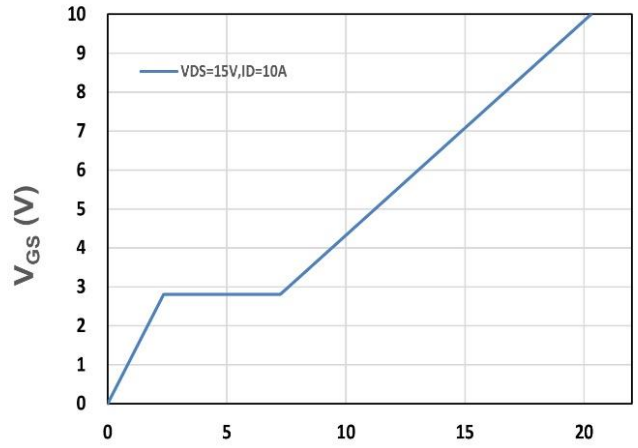


V_{SD} , Source-Drain Voltage(V)

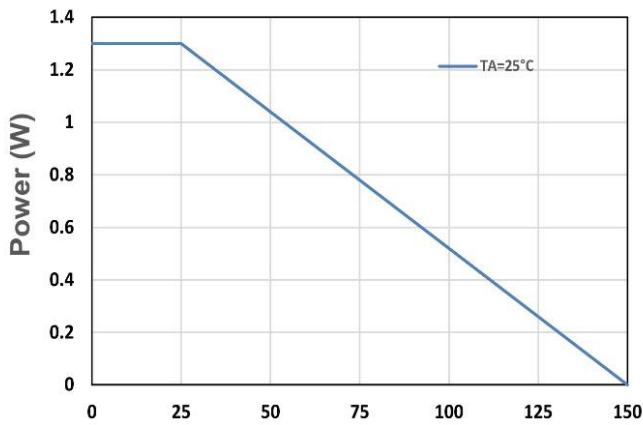
Figure 6. Source-Drain Diode Forward



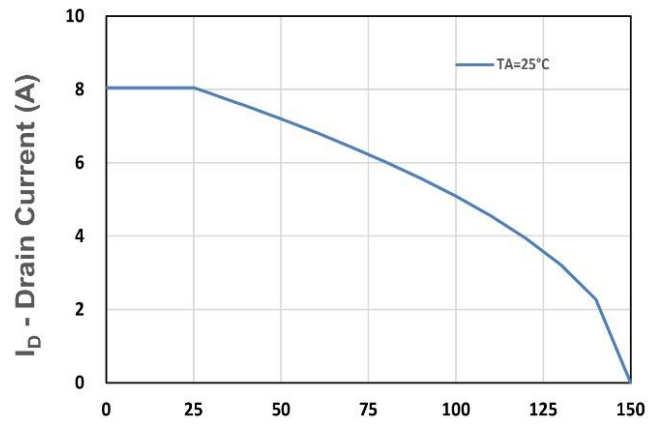
V_{DS} - Drain - Source Voltage (V)
Figure 7. Capacitance



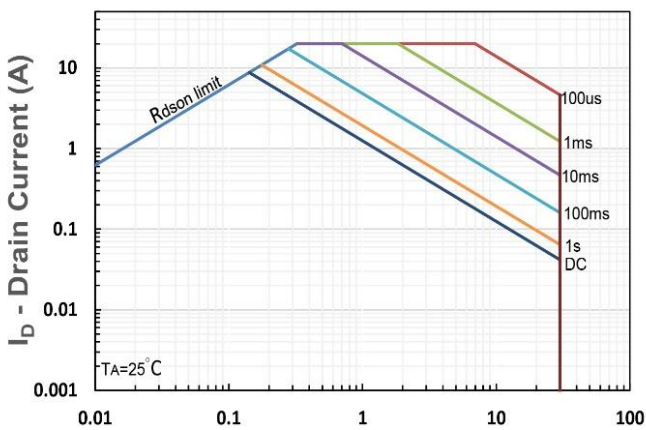
Q_g, Total Gate Charge (nC)
Figure 8. Gate Charge Characteristics



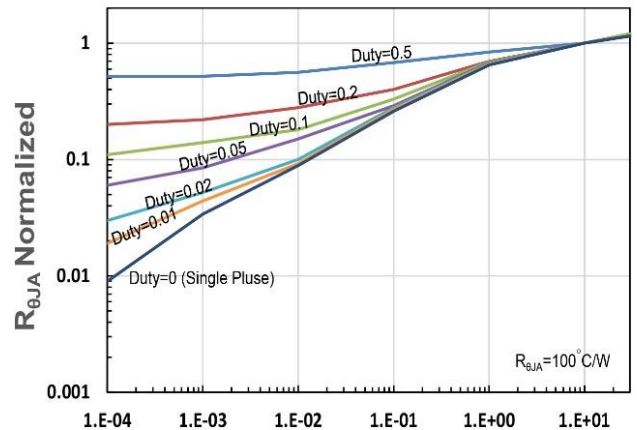
T_J - Junction Temperature (°C)
Figure 9. Power Dissipation



T_J - Junction Temperature (°C)
Figure 10. Drain Current

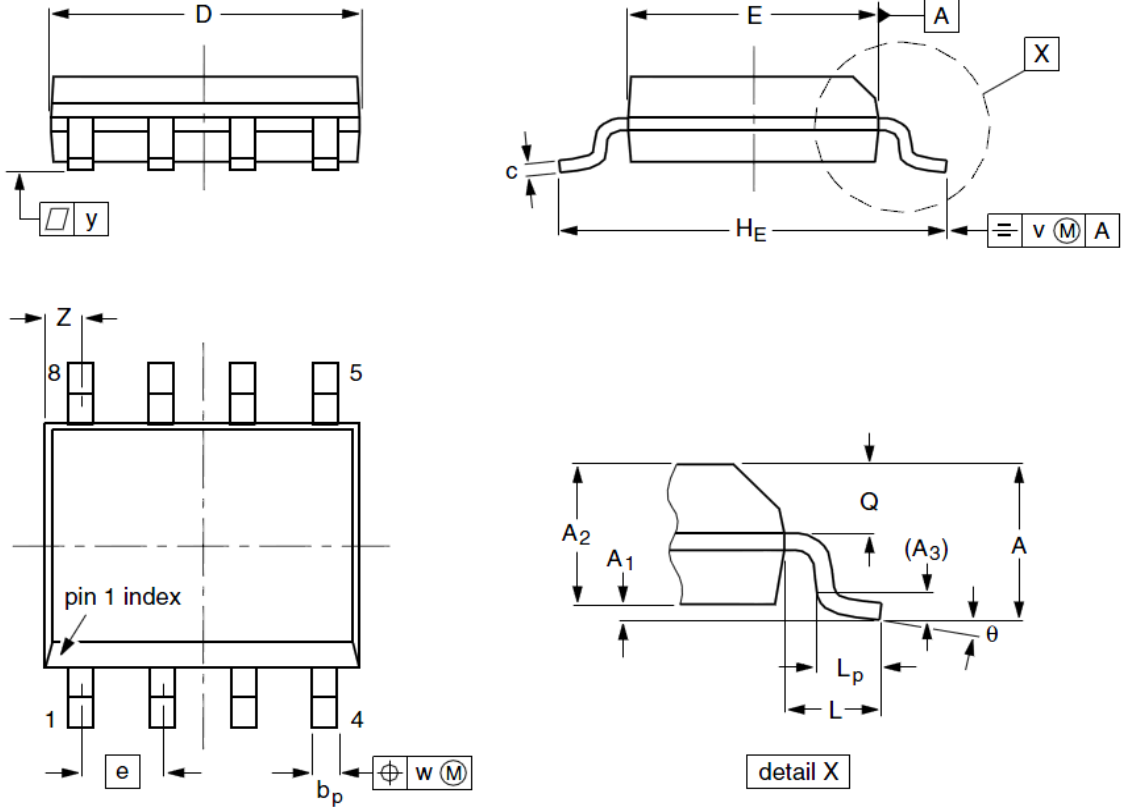


V_{DS} - Drain-Source Voltage (V)
Figure 11. Safe Operating Area



t₁, Square Wave Pulse Duration(s)
Figure 12. R_{θJA} 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°