



Features

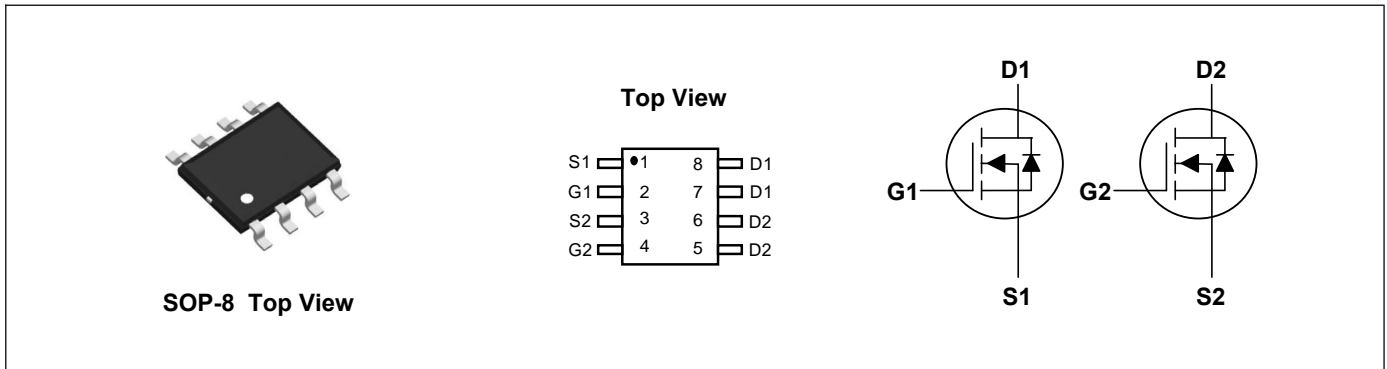
- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

Product Summary

V_{DS}	60	V
I_D	7	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	40	m Ω
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	55	m Ω

Applications

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



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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	$I_D@T_C=25^\circ C$	7	A
Continuous Drain Current ¹	$I_D@T_C=125^\circ C$	4	A
Pulsed Drain Current ²	I_{DM}	28	A
Single Pulse Avalanche Energy ³	EAS	16.2	mJ
Avalanche Current	I_{AS}	18	A
Total Power Dissipation ⁴	$P_D@T_C=25^\circ C$	4	W
Total Power Dissipation ⁴	$P_D@T_C=125^\circ C$	1.3	W
Storage Temperature Range	T_{STG}	-55 to 175	$^\circ C$
Operating Junction Temperature Range	T_J	-55 to 175	$^\circ C$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	---	110	$^\circ C/W$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	---	34	$^\circ C/W$

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 =250μA	60	---	---	V
Static Drain-Source On-Resistance ²	R _{DS(ON)}	V _{GS} =10V, I _D =4.5A	---	28	40	mΩ
		V _{GS} =4.5V, I _D =4A	---	30	55	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250μA	1.5	---	2.5	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V, T _J =25°C	---	---	1	μA
		V _{DS} =60V, V _{GS} =0V, T _J =125°C	---	---	50	
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
Forward Transconductance	g _{fs}	V _{DS} =15V, I _D =4.5A	---	15	---	S
Gate Resistance	R _g	V _{DS} =0V, V _{GS} =0V, f=1MHz	1.3	---	6	Ω
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =5.3A	---	11.7	---	nC
Gate-Source Charge	Q _{gs}		---	1.8	---	
Gate-Drain Charge	Q _{gd}		---	2.8	---	
Turn-On Delay Time	T _{d(on)}	V _{DD} =30V, V _{GS} =10V, R _G =1Ω, I _D =4.4A, R _L =6.8Ω	---	7	---	ns
Rise Time	T _r		---	3.3	---	
Turn-Off Delay Time	T _{d(off)}		---	22.4	---	
Fall Time	T _f		---	2.1	---	
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	600	---	pF
Output Capacitance	C _{oss}		---	110	---	
Reverse Transfer Capacitance	C _{rss}		---	50	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ^{1,5}	I _S	V _G =V _D =0V, Force Current	---	---	3.6	A
Pulsed Source Current ²	I _{SM}		---	---	28	A
Diode Forward Voltage ²	V _{SD}	V _{GS} =0V, I _S =2A, T _J =25°C	---	0.75	1.1	V

Note:

- The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%
- The EAS data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH
- The power dissipation is limited by 175°C junction temperature
- The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

Typical Characteristics

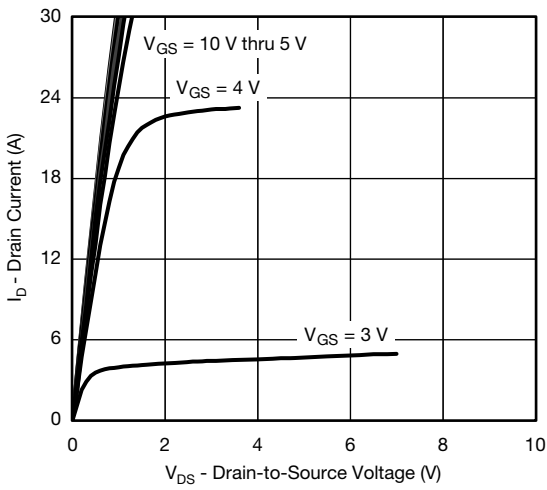


Figure 1. Output Characteristics

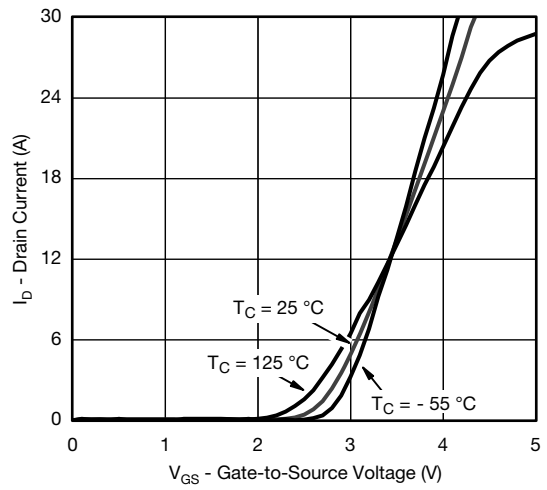


Figure 2. Transfer Characteristics

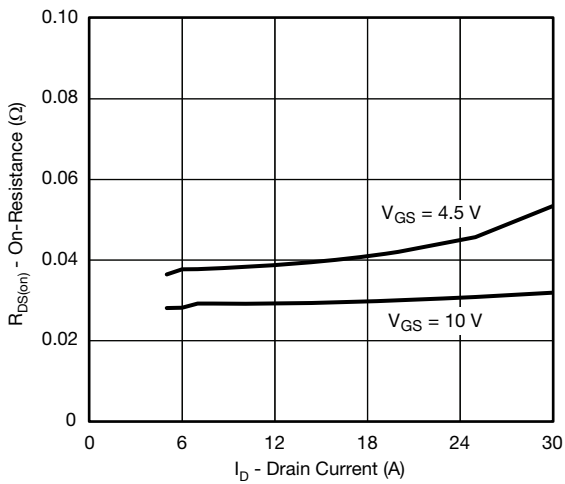


Figure 3. On-Resistance vs. Drain Current

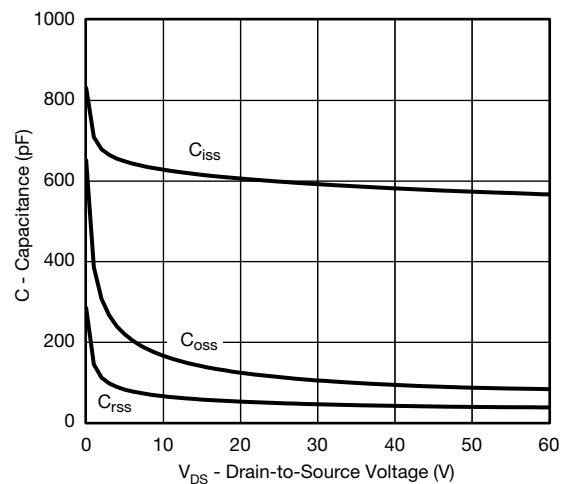


Figure 4. Capacitance

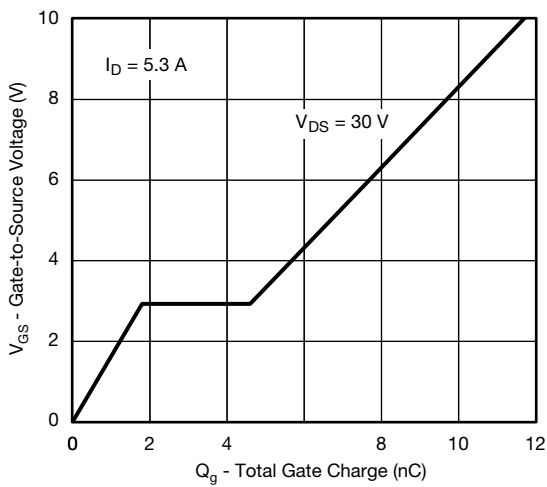


Figure 5. Gate Charge

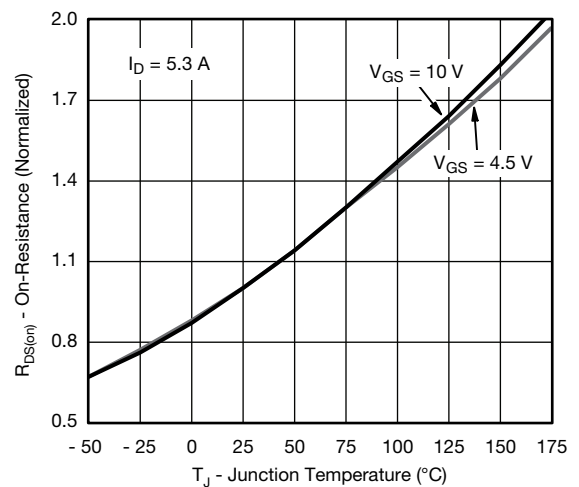


Figure 6. On-Resistance vs. Junction Temperature

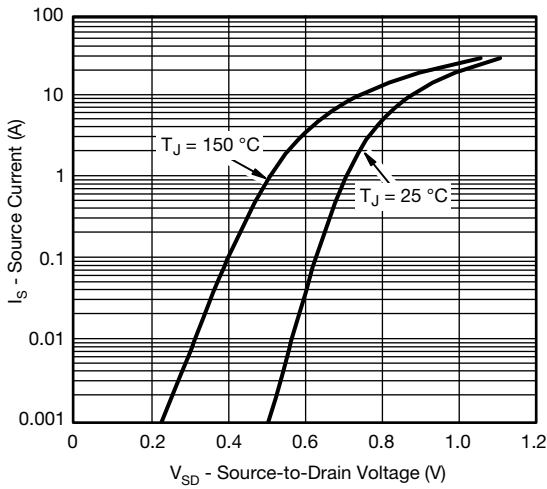


Figure 7. Source Drain Diode Forward Voltage

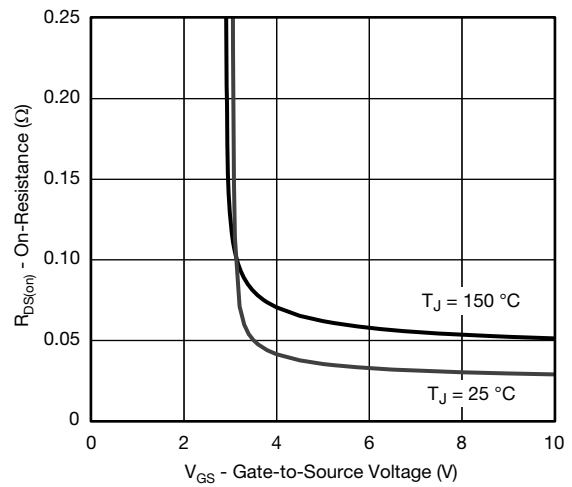


Figure 8. On-Resistance vs. Gate-to-Source Voltage

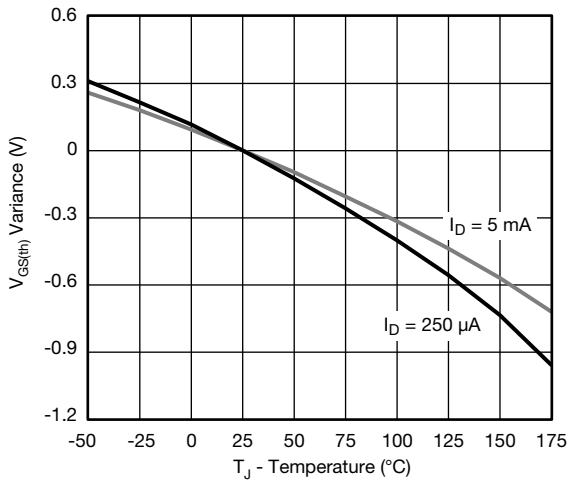


Figure 9. Threshold Voltage

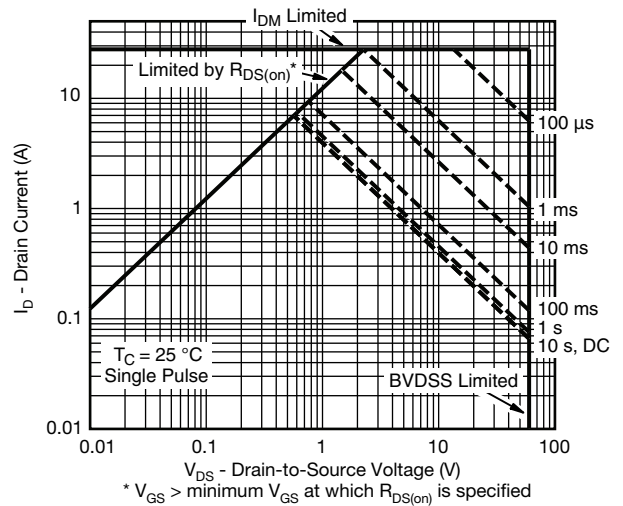


Figure 10. Safe Operating Area

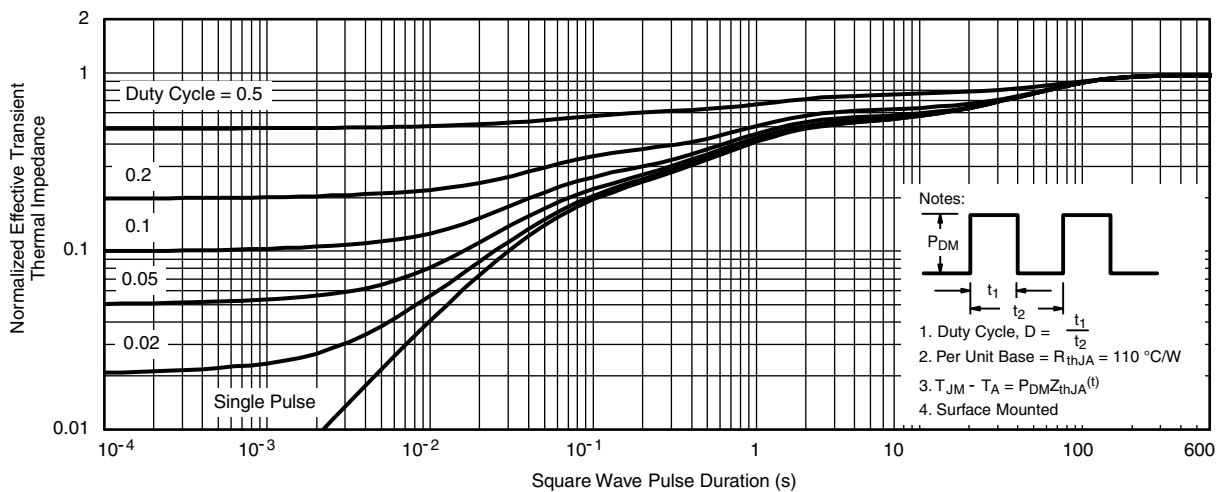


Figure 11. Normalized Thermal Transient Impedance, Junction-to-Ambient

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°