

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}	150	V
I_D	0.76	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	880	m Ω
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	940	m Ω

Applications

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



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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	150	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	$I_D@T_A=25^{\circ}C$	0.76	A
Continuous Drain Current ¹	$I_D@T_A=70^{\circ}C$	0.6	A
Pulsed Drain Current ²	I_{DM}	1.9	A
Single Pulse Avalanche Energy ³	E_{AS}	0.4	mJ
Avalanche Current	I_{AS}	2.8	A
Total Power Dissipation ⁴	$P_D@T_A=25^{\circ}C$	1.1	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	$R_{\theta JA}$	---	110	$^{\circ}C/W$

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	150	---	---	V
Static Drain-Source On-Resistance ²	R _{DS(ON)}	V _{GS} =10V, I _D =0.5A	---	700	880	mΩ
		V _{GS} =4.5V, I _D =0.5A	---	720	940	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	1.0	1.8	2.5	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =120V, 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 =0.1A	---	0.68	---	S
Gate Resistance	R _g	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	4.5	---	Ω
Total Gate Charge	Q _g	V _{DS} =75V, V _{GS} =10V, I _D =1A	---	6.4	---	nC
Gate-Source Charge	Q _{gs}		---	1	---	
Gate-Drain Charge	Q _{gd}		---	1	---	
Turn-On Delay Time	T _{d(on)}	V _{DS} =75V, V _{GS} =10V, R _G =6Ω, I _D =1A	---	1	---	ns
Rise Time	T _r		---	19	---	
Turn-Off Delay Time	T _{d(off)}		---	11	---	
Fall Time	T _f		---	19	---	
Input Capacitance	C _{iss}	V _{DS} =40V, V _{GS} =0V, f=1MHz	---	220	---	pF
Output Capacitance	C _{oss}		---	7	---	
Reverse Transfer Capacitance	C _{rss}		---	3	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage ²	V _{SD}	V _{GS} =0V, I _S =0.5A, T _J =25°C	---	0.7	1.1	V
Reverse Recovery Time	t _{rr}	I _F =0.5A, V _R =20V di/dt=100A/μs, T _J =25°C	---	18	---	nS
Reverse Recovery Charge	Q _{rr}		---	9	---	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=0.1mH
- 4.The power dissipation is limited by 150°C junction temperature

Typical Characteristics

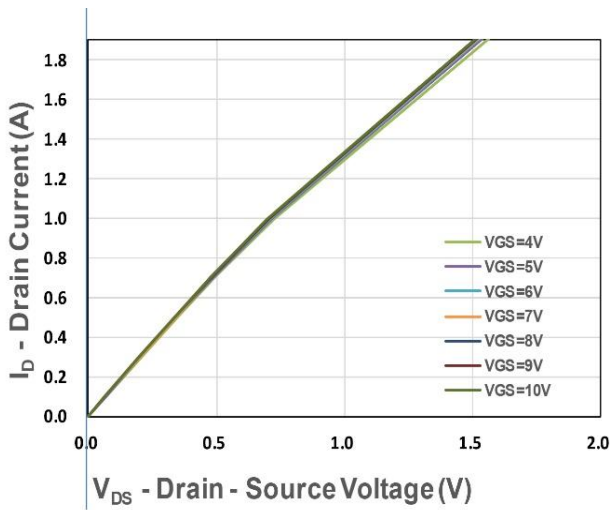


Figure 1. Output Characteristics

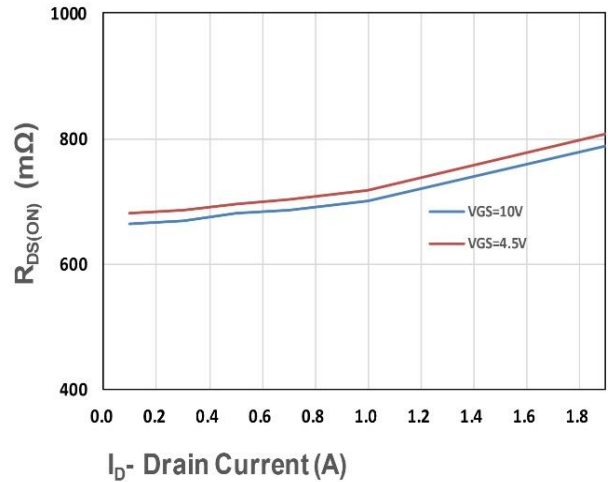


Figure 2. On-Resistance vs. I_D

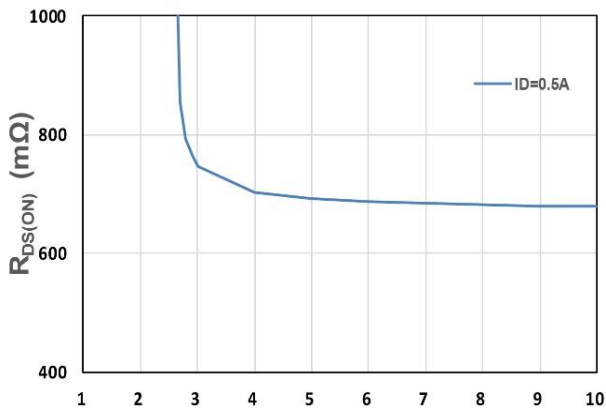


Figure 3. On-Resistance vs. V_{GS}

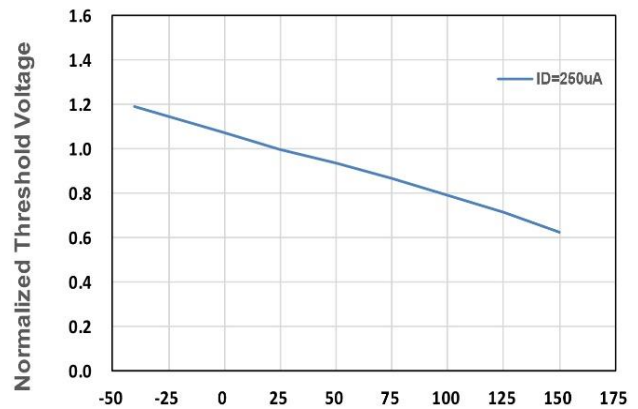


Figure 4. Gate Threshold Voltage

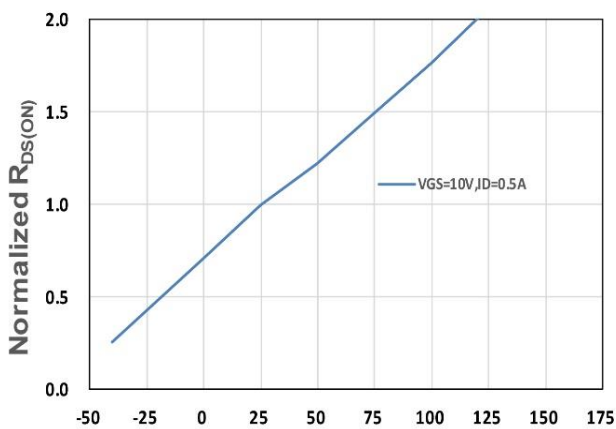


Figure 5. Drain-Source On Resistance

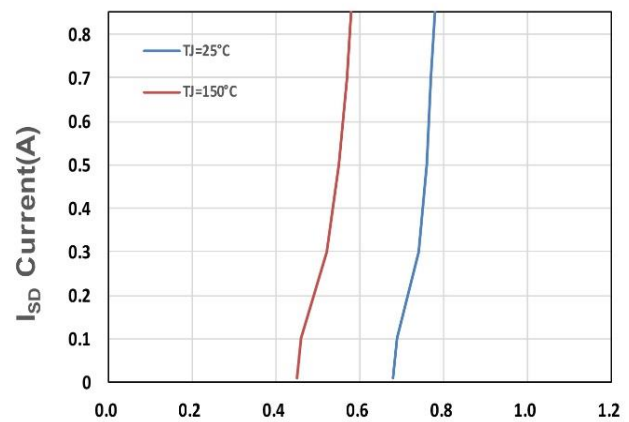
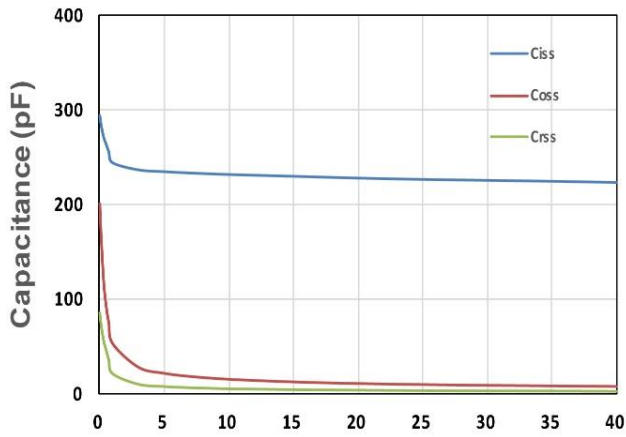
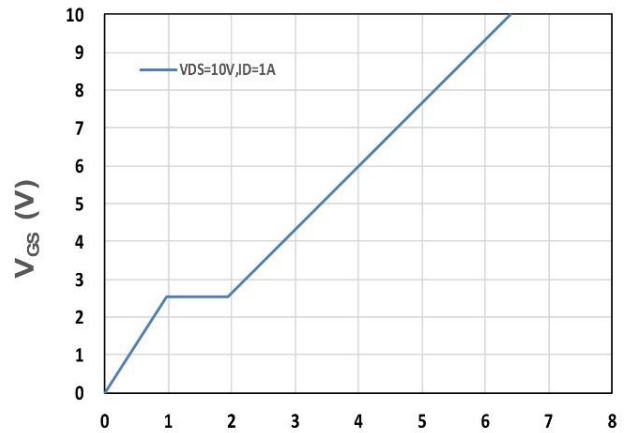


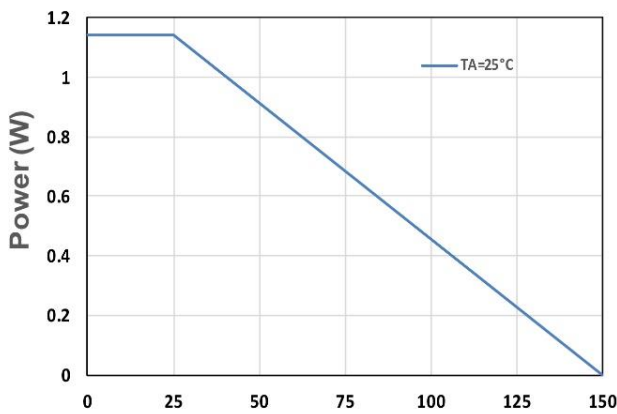
Figure 6. Source-Drain Diode Forward



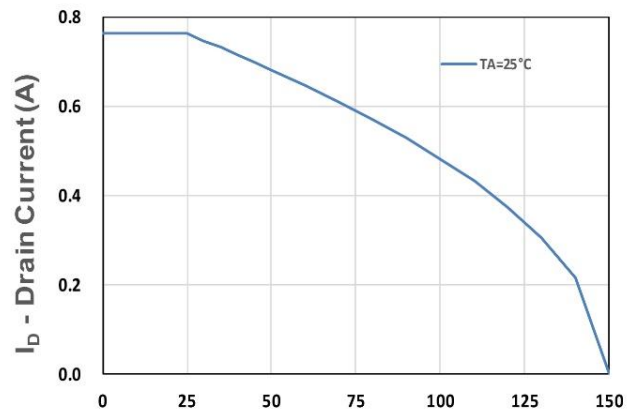
V_{DS} - Drain - Source Voltage (V)
Figure 7. Capacitance



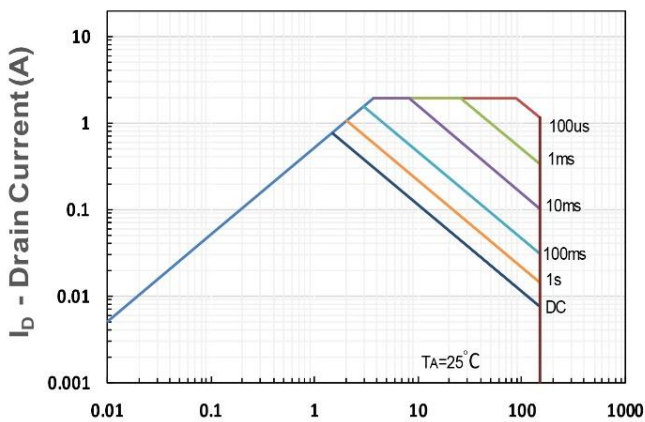
Q_g , Total Gate Charge (nC)
Figure 8. Gate Charge Characteristics



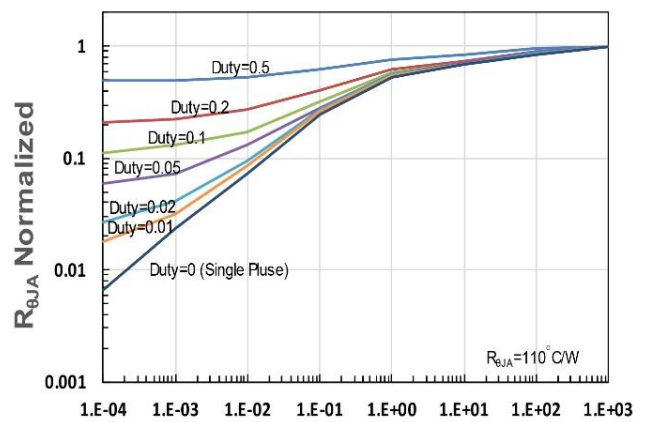
T_j - Junction Temperature ($^{\circ}C$)
Figure 9. Power Dissipation



T_j - Junction Temperature ($^{\circ}C$)
Figure 10. Drain Current



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



t_1 , Square Wave Pulse Duration (s)
Figure 12. $R_{\theta JA}$ Transient Thermal Impedance

SOT23 Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.90	1.05	1.20	e₁	--	0.95	--
A₁	0.01	0.05	0.10	H_E	2.10	2.40	2.50
b_p	0.38	0.42	0.48	L_p	0.40	0.50	0.60
c	0.09	0.13	0.15	Q	0.45	0.49	0.55
D	2.80	2.92	3.00	V	--	0.20	--
E	1.20	1.33	1.40	W	--	0.10	--
e	--	1.90	--				