

Features

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

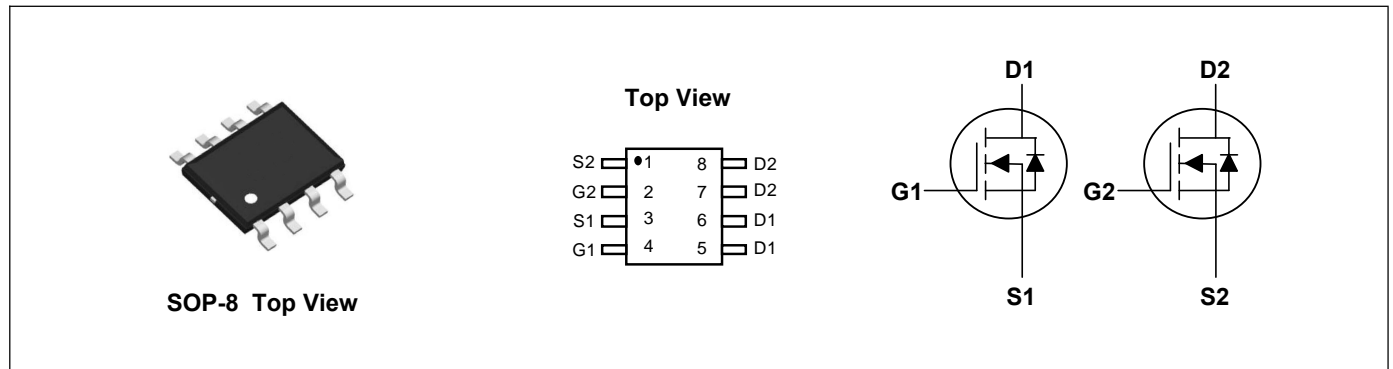
Product Summary



V_{DS}	20	V
I_D	6	A
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	28	m Ω
$R_{DS(ON)}$ (at $V_{GS}=2.5V$)	37	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}	20	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current ¹	I_D	6	A
Continuous Drain Current ¹	$I_D@T_C=100^{\circ}C$	3.8	A
Pulsed Drain Current ²	I_{DM}	25	A
Total Power Dissipation ³	P_D	1.25	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	$R_{\theta JA}$	---	100	$^{\circ}C/W$

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	20	---	---	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =6A	---	20	28	mΩ
		V _{GS} =2.5V, I _D =5A	---	26	37	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	0.5	0.7	1.2	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V, T _J =25°C	---	---	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±10V, V _{DS} =0V	---	---	±100	nA
Forward Transconductance	g _{fs}	V _{DS} =5V, I _D =6A	20	---	---	S
Total Gate Charge	Q _g	V _{DS} =10V, V _{GS} =4.5V, I _D =3A	---	10	---	nC
Gate-Source Charge	Q _{gs}		---	1.5	---	
Gate-Drain Charge	Q _{gd}		---	1.6	---	
Turn-On Delay Time	T _{d(on)}	V _{DD} =10V, R _G =6Ω, V _{GS} =4.5V, I _D =1A	---	8	---	ns
Rise Time	T _r		---	9	---	
Turn-Off Delay Time	T _{d(off)}		---	15	---	
Fall Time	T _f		---	4	---	
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1MHz	---	640	---	pF
Output Capacitance	C _{oss}		---	140	---	
Reverse Transfer Capacitance	C _{rss}		---	80	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ²	I _S		---	---	6	A
Diode Forward Voltage ¹	V _{SD}	V _{GS} =0V, I _S =1.7A, T _J =25°C	---	---	1.2	V

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 power dissipation is limited by 150°C junction temperature

Typical Characteristics

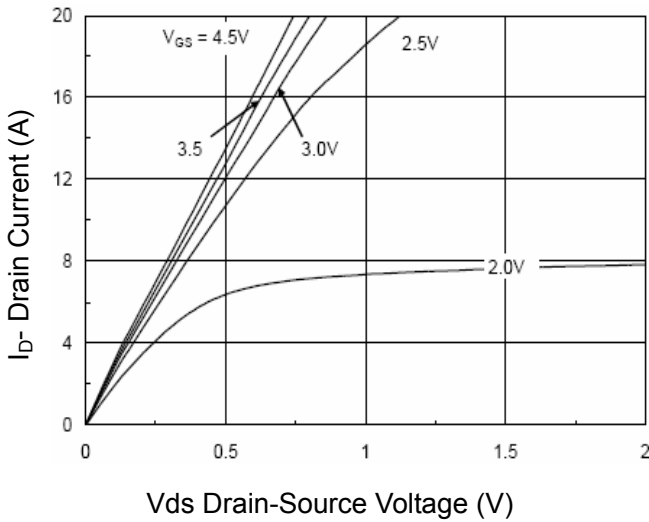


Figure 1 Output Characteristics

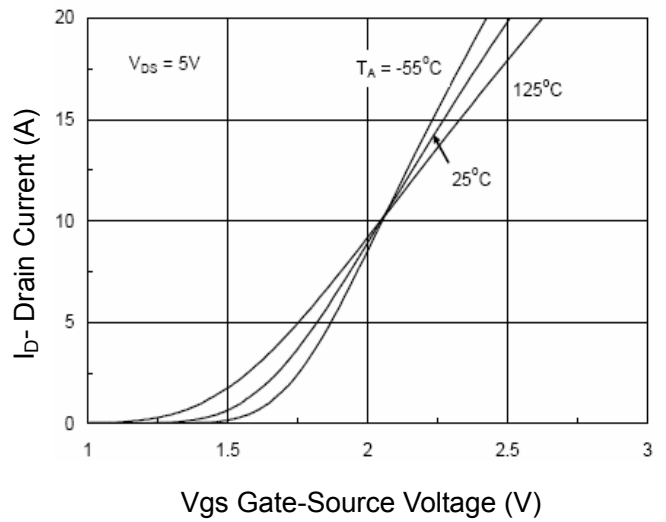


Figure 2 Transfer Characteristics

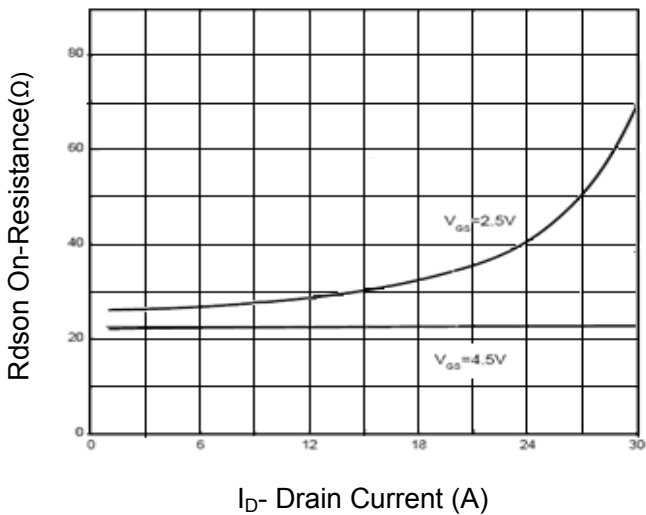


Figure 3 Rdson- Drain Current

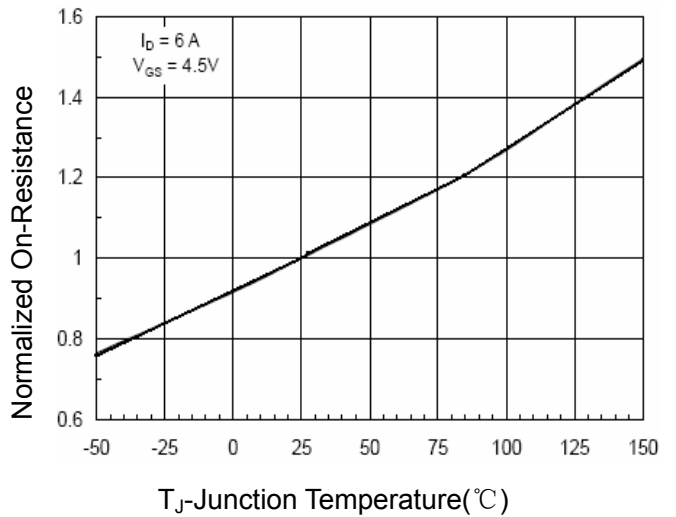


Figure 4 Rdson-Junction Temperature

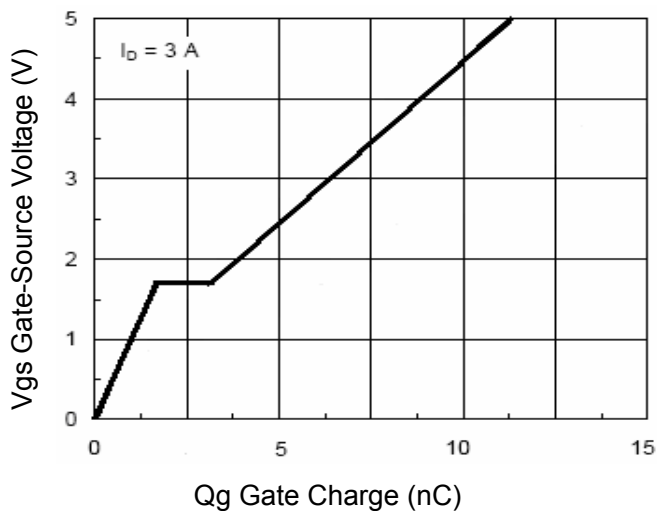


Figure 5 Gate Charge

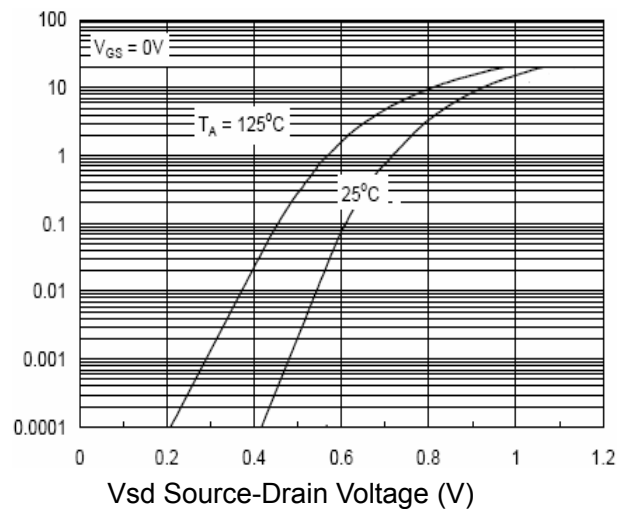


Figure 6 Source- Drain Diode Forward

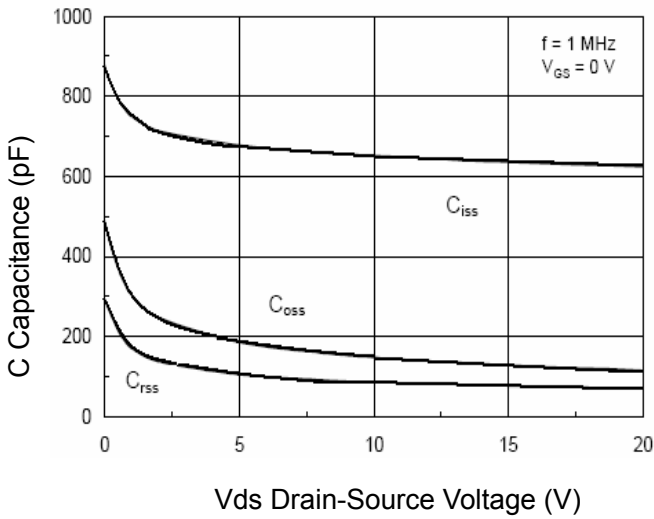


Figure 7 Capacitance vs Vds

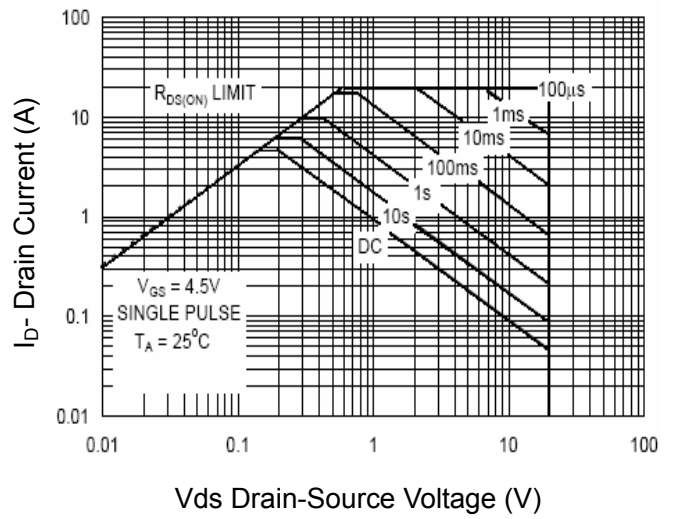


Figure 8 Safe Operation Area

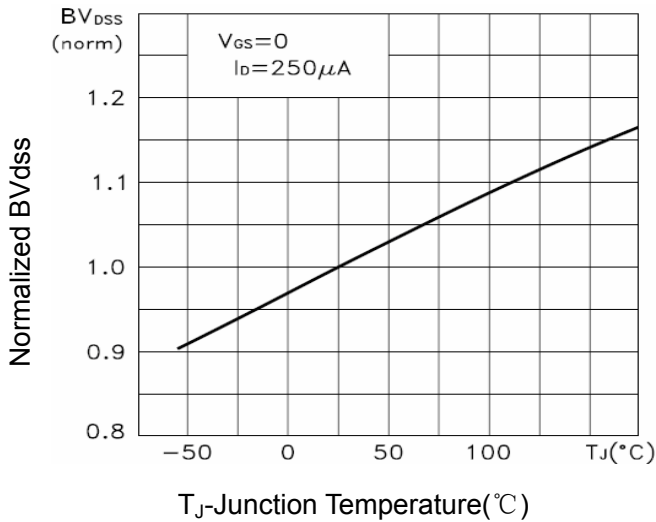


Figure 9 BV_{DSS} vs Junction Temperature

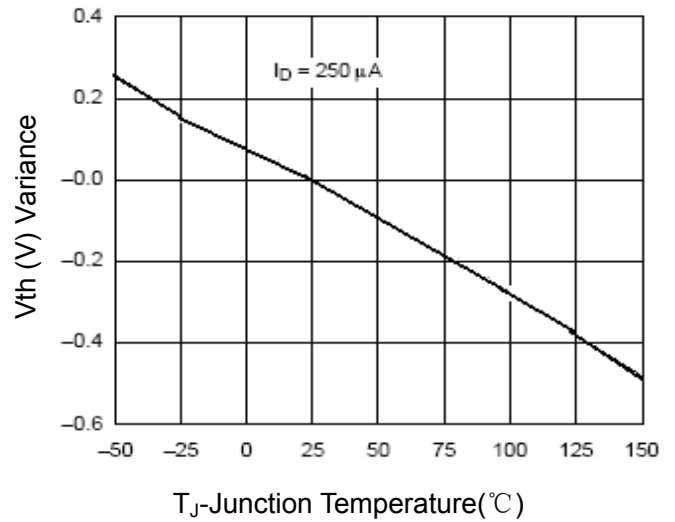


Figure 10 V_{GS(th)} vs Junction Temperature

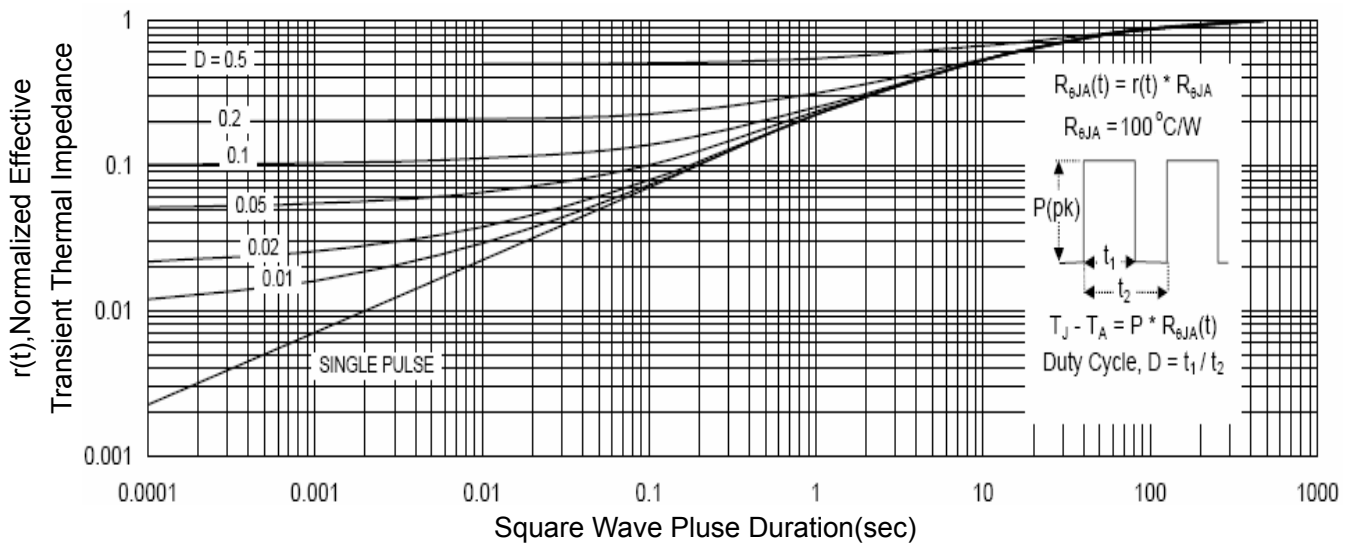


Figure 11 Normalized Maximum Transient Thermal Impedance

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°