

Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Green Device Available
- ESD Protected 3KV Embedded

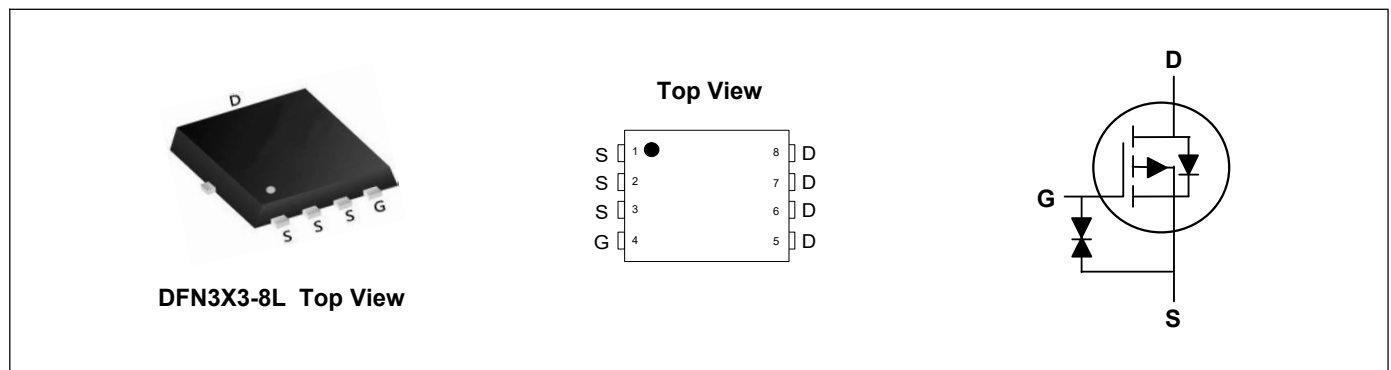
Applications

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

Product Summary



V_{DS}	-30	V
I_D	-39	A
$R_{DS(ON)}$ (at $V_{GS}=-10V$)	14	m Ω
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$)	24	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}	± 25	V
Continuous Drain Current ¹	$I_D@T_C=25^\circ\text{C}$	-39	A
Continuous Drain Current ¹	$I_D@T_C=100^\circ\text{C}$	-25	A
Continuous Drain Current ¹	$I_D@T_A=25^\circ\text{C}$	-12	A
Continuous Drain Current ¹	$I_D@T_A=70^\circ\text{C}$	-9.8	A
Pulsed Drain Current ²	I_{DM}	-70	A
Single Pulse Avalanche Energy ³	EAS	81	mJ
Avalanche Current	I_{AS}	18	A
Total Power Dissipation ³	$P_D@T_C=25^\circ\text{C}$	32.9	W
Total Power Dissipation ³	$P_D@T_C=100^\circ\text{C}$	13.2	W
Total Power Dissipation ³	$P_D@T_A=25^\circ\text{C}$	3.1	W
Total Power Dissipation ³	$P_D@T_A=70^\circ\text{C}$	2	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	$R_{\theta JC}$	---	75	$^\circ\text{C/W}$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	---	3.8	$^\circ\text{C/W}$

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 =-20A	---	11	14	mΩ
		V _{GS} =-4.5V, I _D =-10A	---	18	24	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =-250uA	-1.3	-1.8	-2.3	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-24V, V _{GS} =0V, T _J =25°C	---	---	-1	uA
		V _{DS} =-24V, V _{GS} =0V, T _J =85°C	---	---	-30	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±25V, V _{DS} =0V	---	---	±10	uA
Total Gate Charge	Q _g	V _{DS} =-15V, V _{GS} =-10V, I _D =-20A	---	30	---	nC
Gate-Source Charge	Q _{gs}		---	1.2	---	
Gate-Drain Charge	Q _{gd}		---	11	---	
Turn-On Delay Time	T _{d(on)}	V _{DD} =-15V, V _{GS} =-10V, R _G =6Ω, R _L =15Ω, I _D =-1A	---	11	---	ns
Rise Time	T _r		---	11	---	
Turn-Off Delay Time	T _{d(off)}		---	101	---	
Fall Time	T _f		---	60	---	
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, f=1MHz	---	1380	---	pF
Output Capacitance	C _{oss}		---	280	---	
Reverse Transfer Capacitance	C _{rss}		---	217	---	

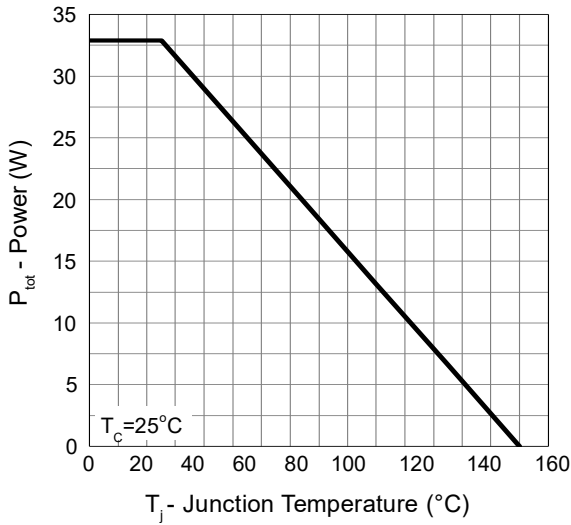
Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ¹	I _S	T _C =25°C	---	---	-20	A
Diode Forward Voltage ²	V _{SD}	V _{GS} =0V, I _S =-1A, T _J =25°C	---	-0.7	-1.0	V
Reverse Recovery Time	t _{rr}	I _F =-20A, di/dt=100A/μs, T _J =25°C	---	20	---	nS
Reverse Recovery Charge	Q _{rr}		---	8	---	nC

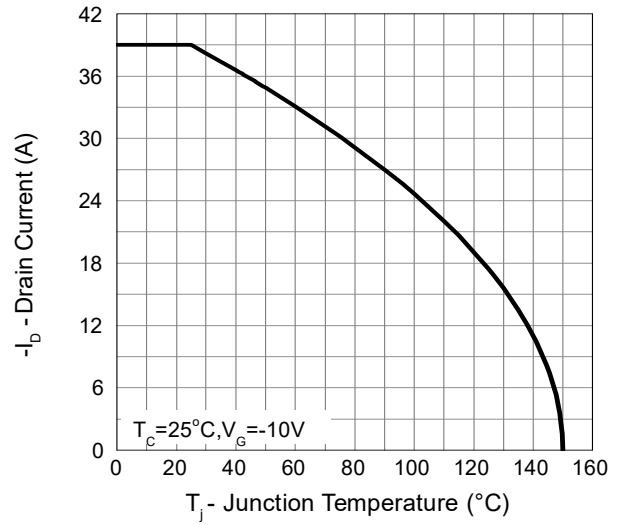
Note:

- 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 power dissipation is limited by 150°C junction temperature

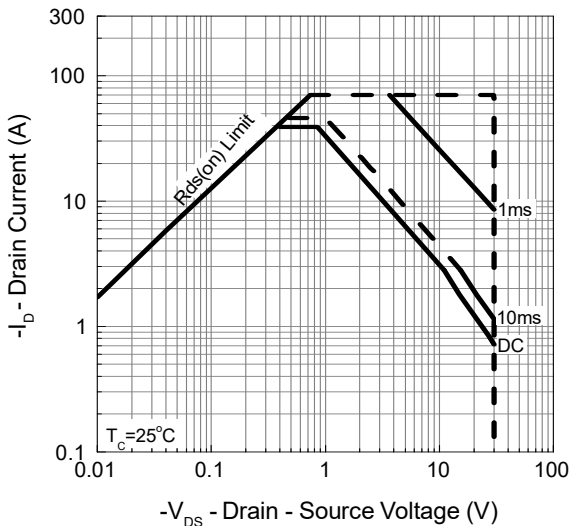
Typical Characteristics



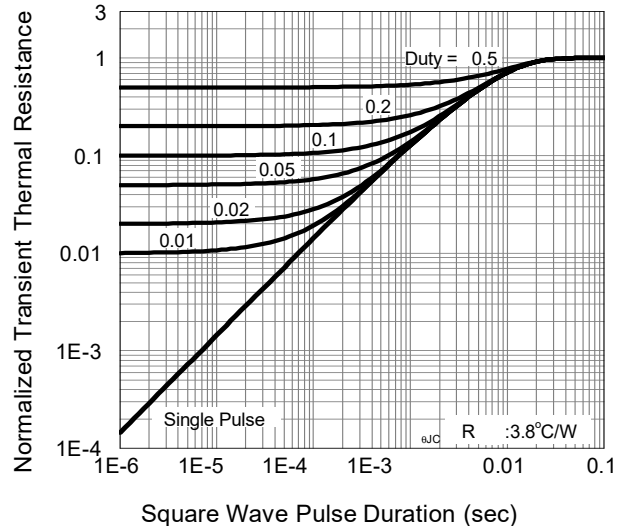
Power Dissipation



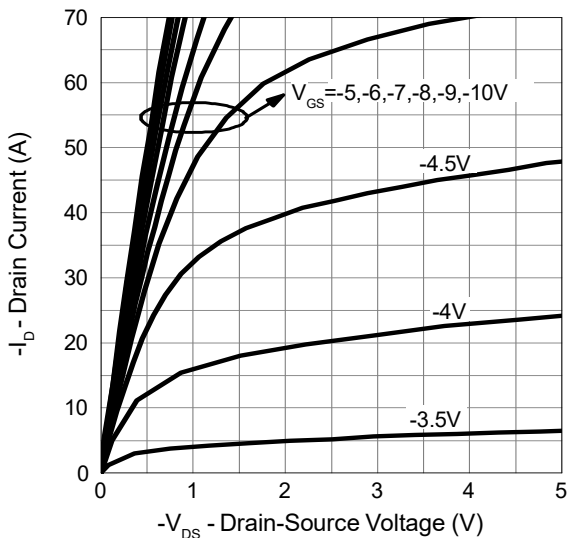
Drain Current



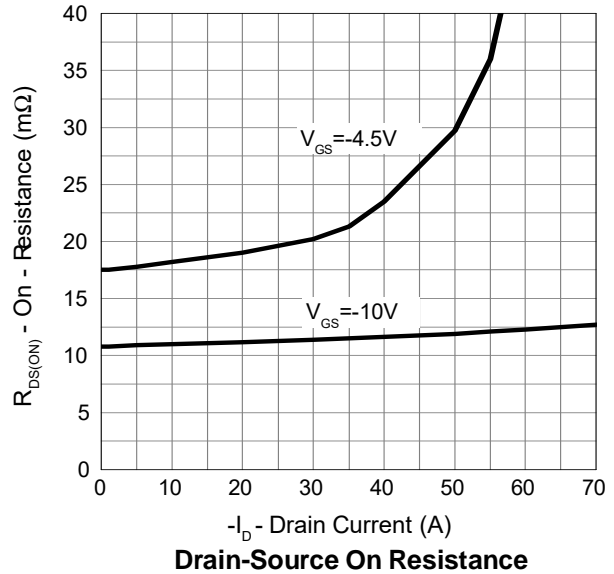
Safe Operation Area



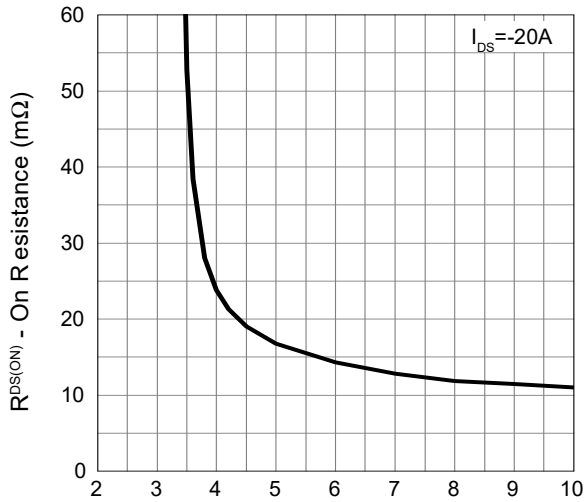
Thermal Transient Impedance



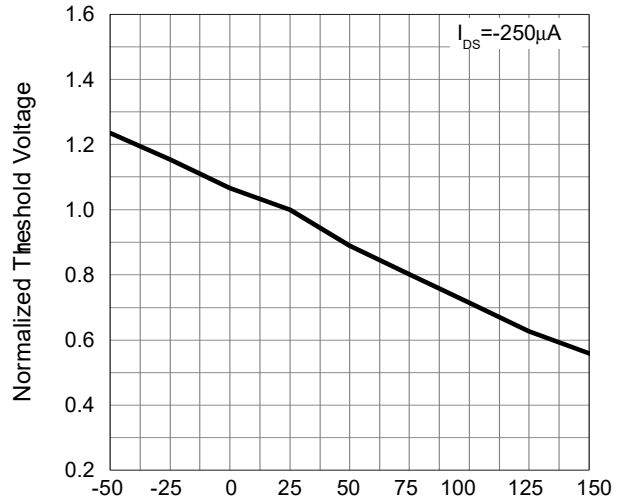
Output Characteristics



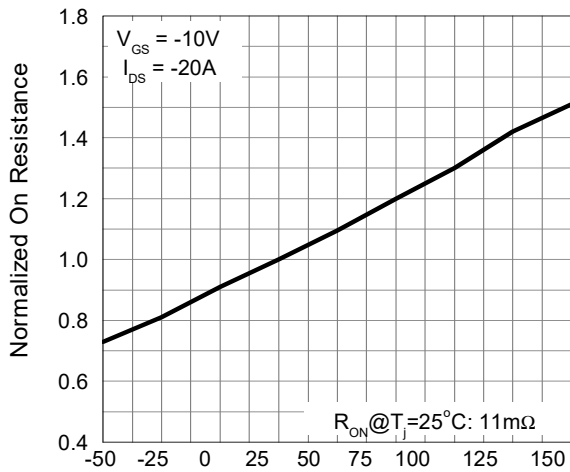
Drain-Source On Resistance



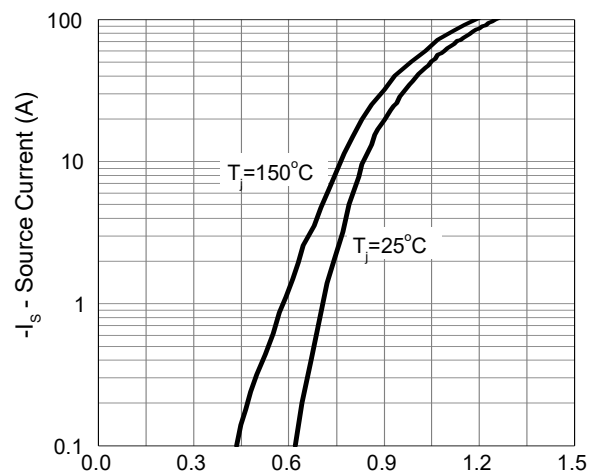
$-V_{GS}$ - Gate - Source Voltage (V)
Gate-Source On Resistance



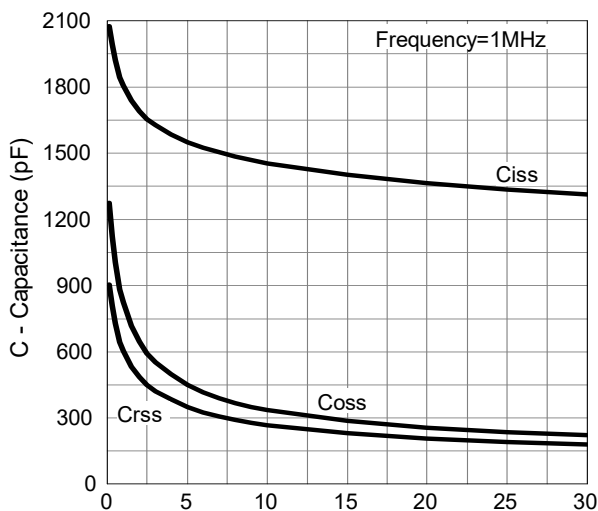
T_j - Junction Temperature ($^{\circ}C$)
Gate Threshold Voltage



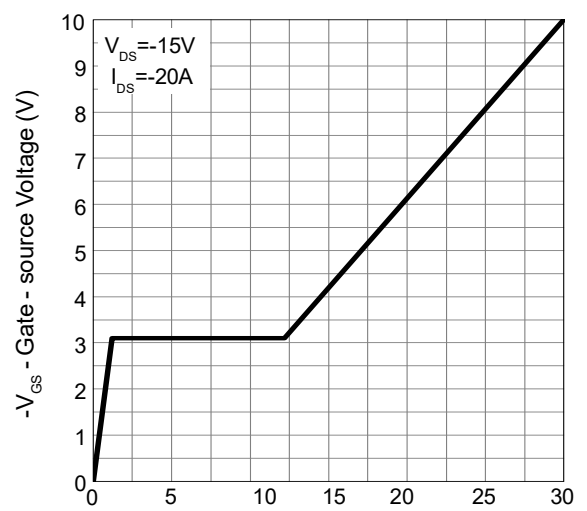
T_j - Junction Temperature ($^{\circ}C$)
Drain-Source On Resistance



$-V_{SD}$ - Source - Drain Voltage (V)
Source-Drain Diode Forward

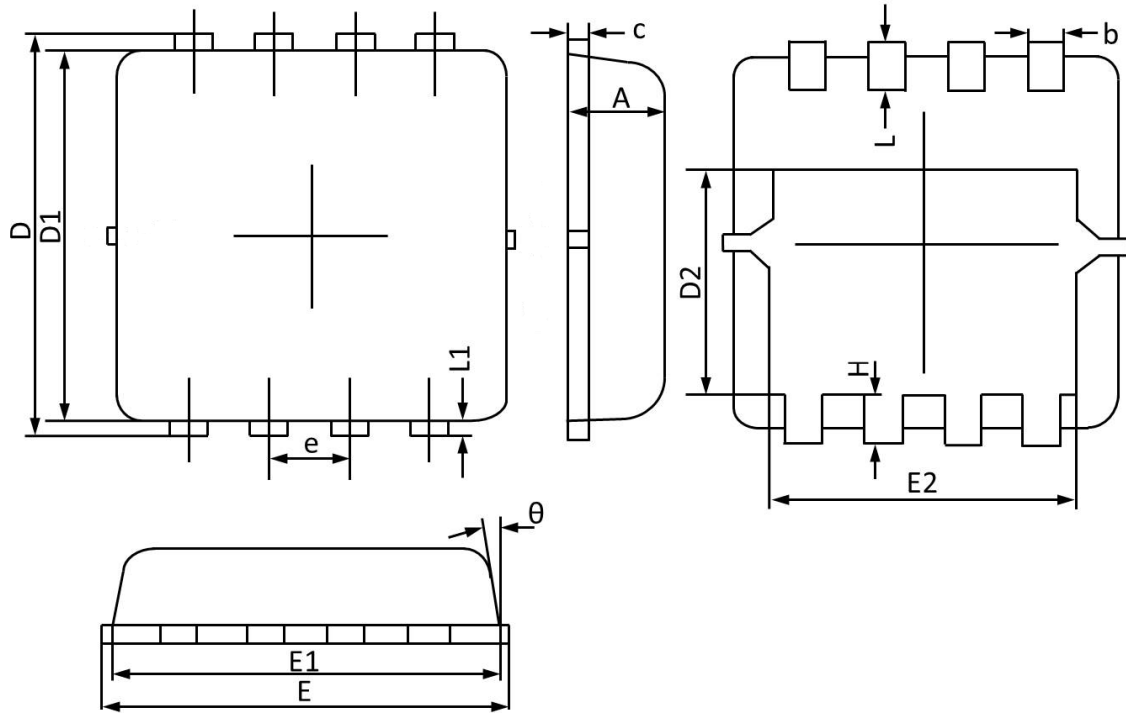


$-V_{DS}$ - Drain - Source Voltage (V)
Capacitance



Q_g - Gate Charge (nC)
Gate Charge

DFN3X3-8L Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.70	0.75	0.85	E1	2.90	3.10	3.25
b	0.24	0.30	0.35	E2	2.35	2.50	2.60
c	0.10	0.17	0.25	e	0.65 BSC		
D	3.10	3.30	3.45	H	0.30	0.40	0.50
D1	2.90	3.05	3.20	L	0.30	0.40	0.50
D2	1.45	1.70	1.95	L1	--	0.13	--
E	3.05	3.25	3.40	theta	0°		14°