

## Features

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

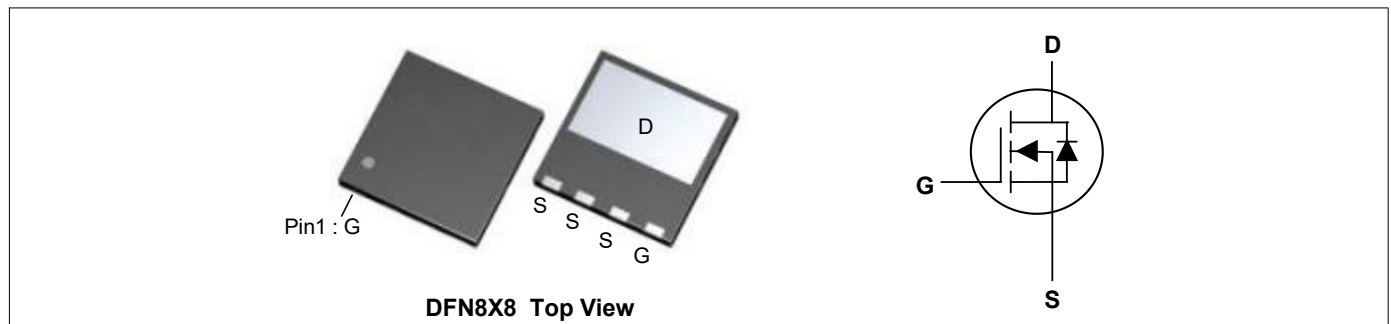
## Applications

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

## Product Summary



$V_{DS}$	40	V
$I_D$	300	A
$R_{DS(ON)}$ (at $V_{GS}=10V$ )	0.7	m $\Omega$
$R_{DS(ON)}$ (at $V_{GS}=6V$ )	1.5	m $\Omega$



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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	$V_{DS}$	40	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current <sup>1</sup>	$I_D$	300	A
Continuous Drain Current <sup>1</sup>	$I_D@T_C=100^\circ\text{C}$	283	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	1200	A
Single Pulse Avalanche Energy <sup>3</sup>	EAS	2112	mJ
Total Power Dissipation <sup>4</sup>	$P_D$	250	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-Case <sup>1</sup>	$R_{\theta JC}$	---	0.5	$^\circ\text{C/W}$

**Electrical Characteristics (T<sub>J</sub>=25°C, unless otherwise noted)**

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	40	---	---	V
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =50A	---	0.6	0.7	mΩ
		V <sub>GS</sub> =6V, I <sub>D</sub> =30A	---	1.2	1.5	mΩ
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	2	---	4	V
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =32V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	---	---	1	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	---	---	±100	nA
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =100A	---	90	---	S
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =10V, I <sub>D</sub> =50A	---	123	---	nC
Gate-Source Charge	Q <sub>gs</sub>		---	39	---	
Gate-Drain Charge	Q <sub>gd</sub>		---	30	---	
Turn-On Delay Time	T <sub>d(on)</sub>	V <sub>DD</sub> =20V, R <sub>G</sub> =3.9Ω, V <sub>GS</sub> =10V, I <sub>D</sub> =50A	---	25	---	ns
Rise Time	T <sub>r</sub>		---	113	---	
Turn-Off Delay Time	T <sub>d(off)</sub>		---	89	---	
Fall Time	T <sub>f</sub>		---	91	---	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V, f=1MHz	---	7322	---	pF
Output Capacitance	C <sub>oss</sub>		---	2935	---	
Reverse Transfer Capacitance	C <sub>rss</sub>		---	141	---	

**Drain-Source Diode Characteristics**

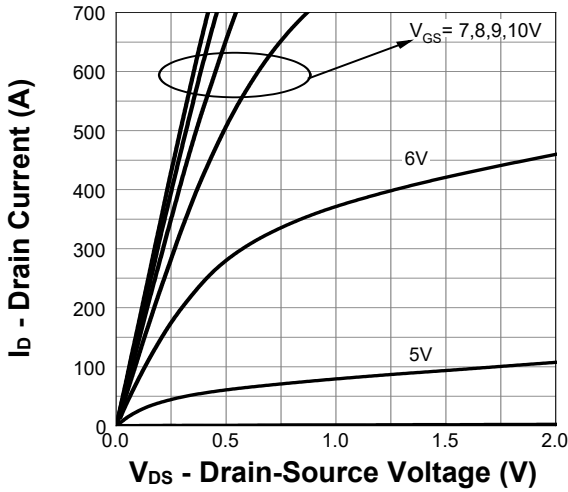
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current <sup>2</sup>	I <sub>S</sub>		---	---	300	A
Diode Forward Voltage <sup>1</sup>	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =50A, T <sub>J</sub> =25°C	---	---	1.3	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =I <sub>S</sub> , di/dt=100A/μs, T <sub>J</sub> =25°C	---	39	---	nS
Reverse Recovery Charge	Q <sub>rr</sub>		---	40	---	nC

**Note:**

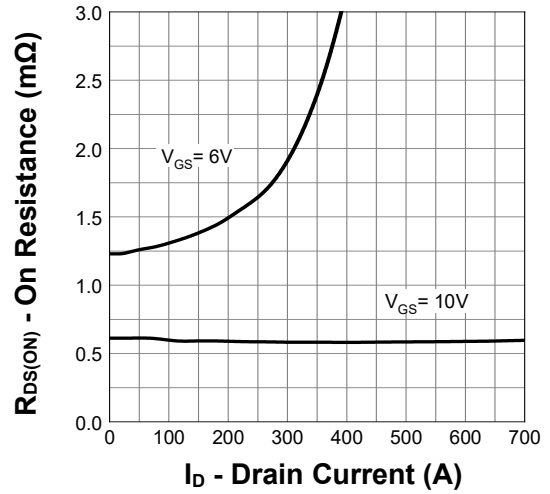
1. The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%
3. The EAS data shows Max. rating. The test condition is V<sub>DD</sub>=20V, V<sub>GS</sub>=10V, L=0.5mH
4. The power dissipation is limited by 150°C junction temperature

**Typical Characteristics**

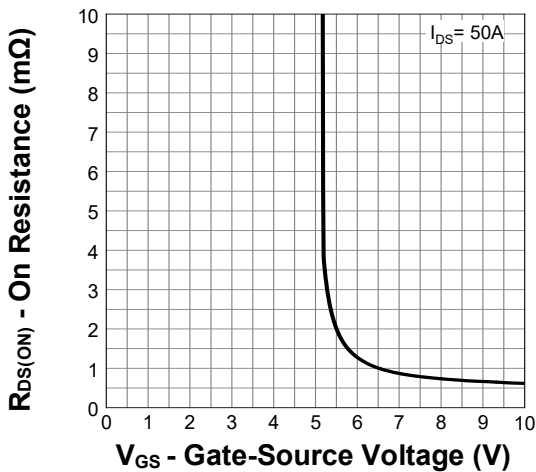
**Output Characteristics**



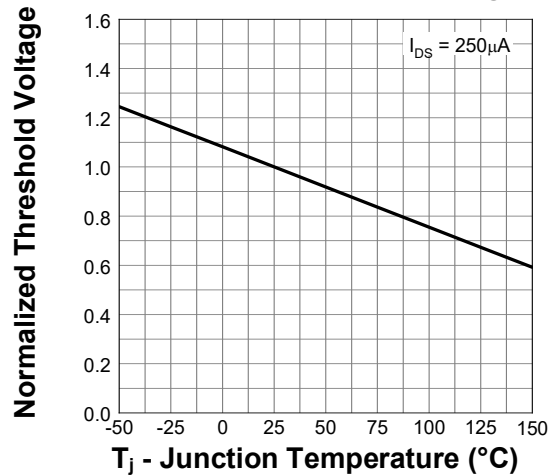
**On Resistance**



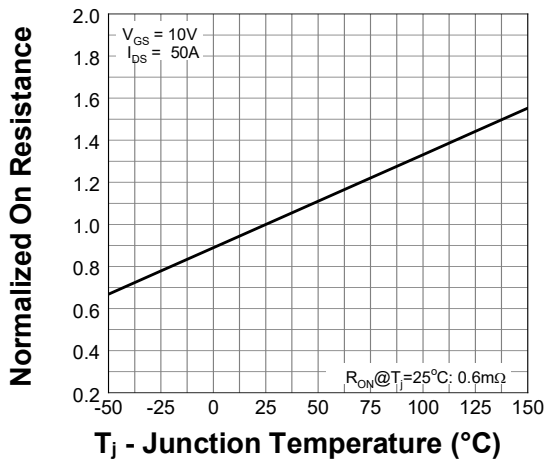
**Transfer Characteristics**



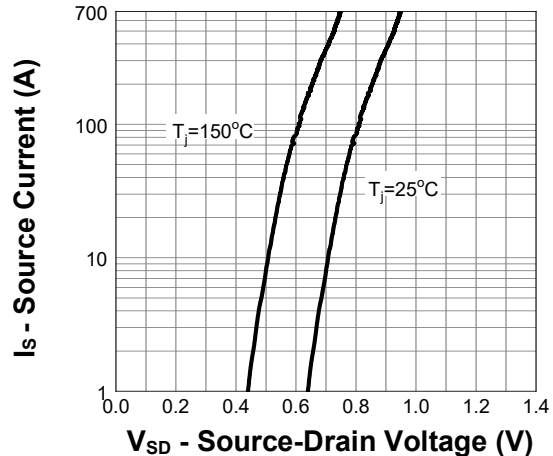
**Normalized Threshold Voltage**

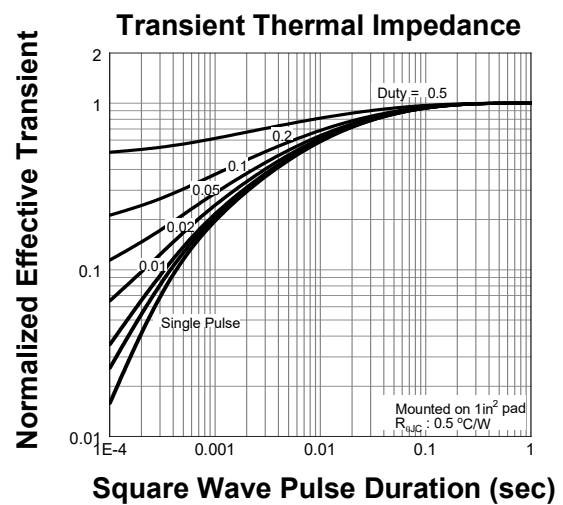
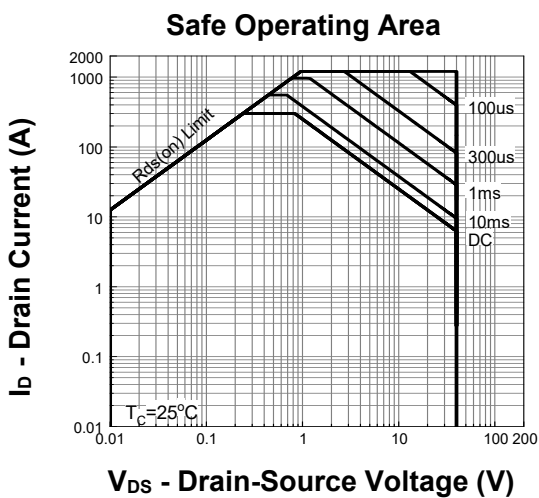
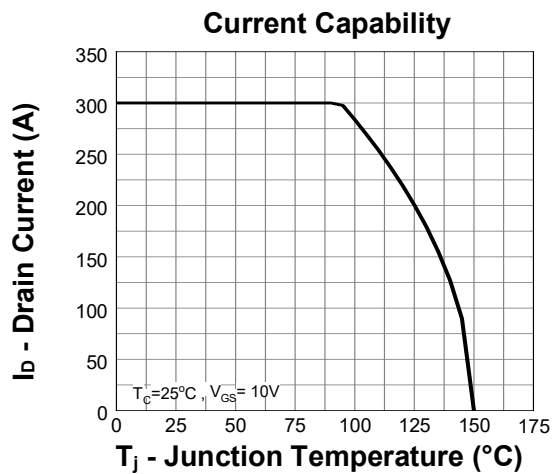
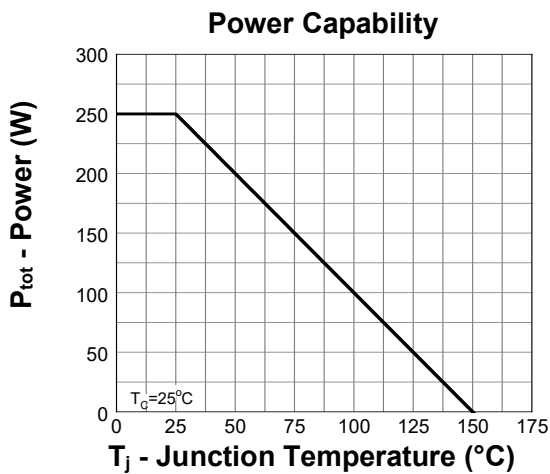
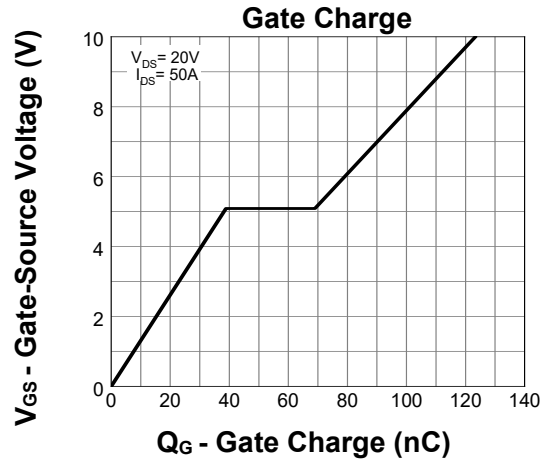
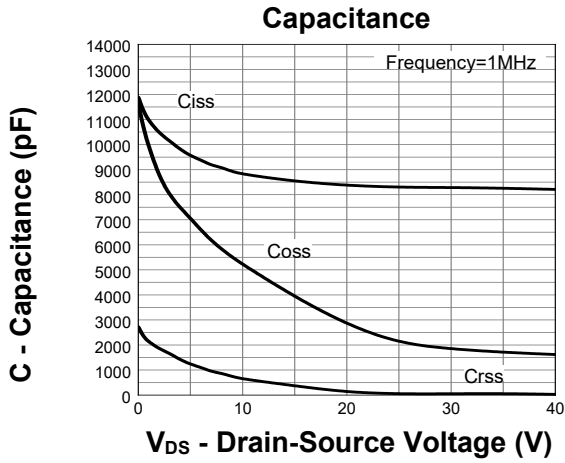


**Normalized On Resistance**

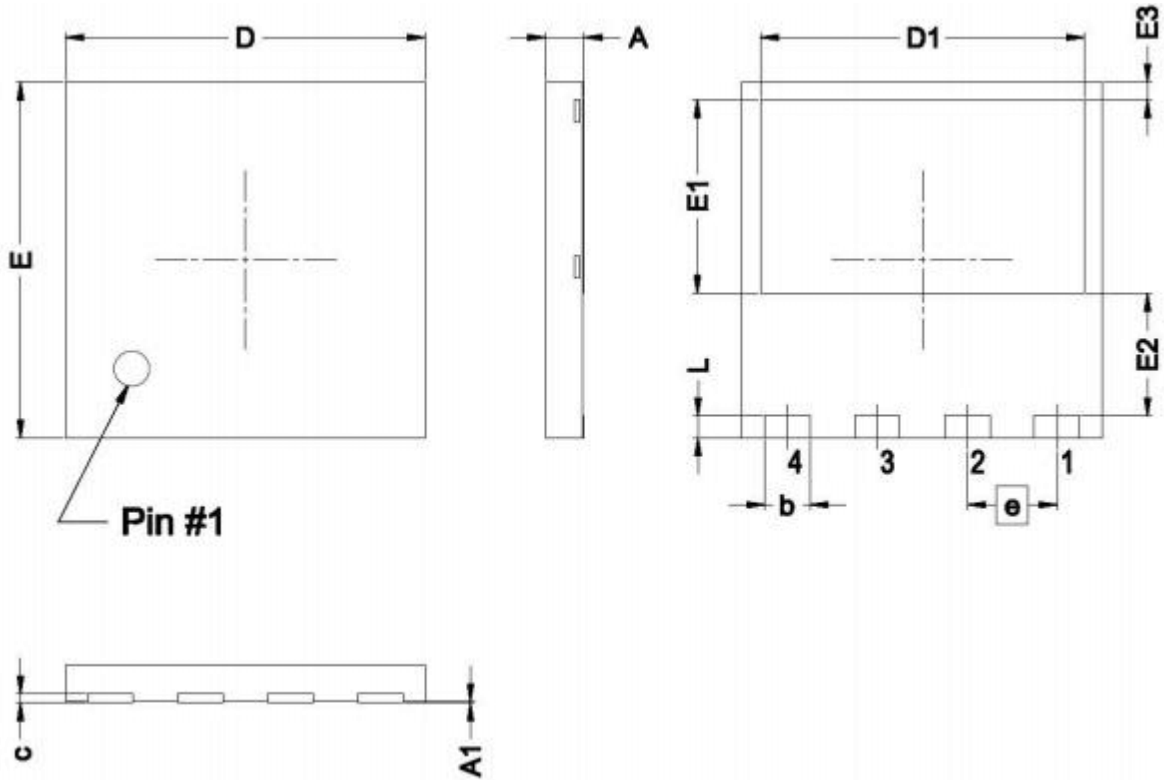


**Diode Forward Current**





**DFN8X8 Package Outline Dimensions**



Symbol	Dimensions (unit: mm)			Symbol	Dimensions (unit: mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.75	0.85	0.95	E	7.90	8.00	8.10
A1	0.00		0.05	E1	4.20	4.35	4.45
b	0.90	1.00	1.10	E2	2.60	2.75	2.85
c	0.10	0.20	0.30	E3	0.30	0.40	0.50
D	7.90	8.00	8.10	e	2.00 BSC		
D1	7.10	7.20	7.30	L	0.40	0.50	0.60