

Features

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

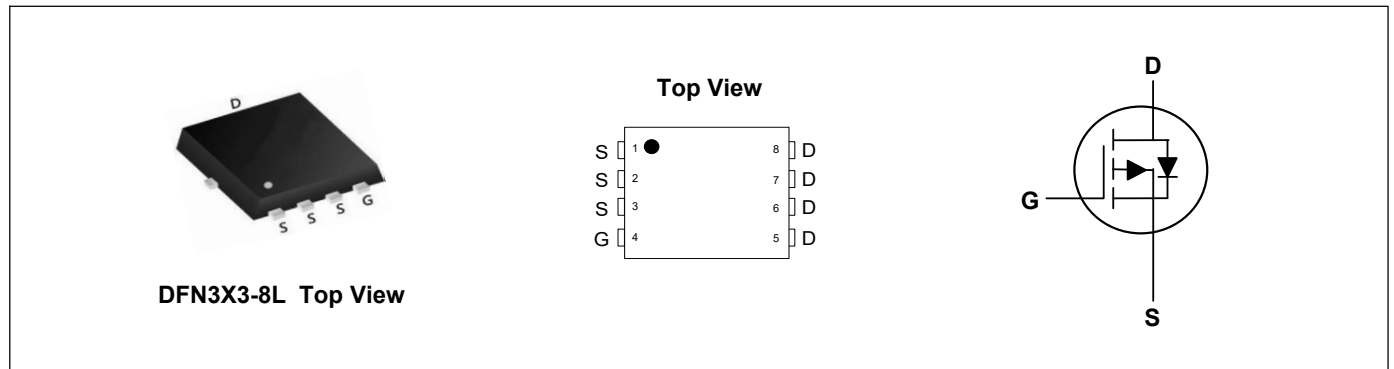
Applications

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

Product Summary



V_{DS}	-40	V
I_D	-50	A
$R_{DS(ON)}$ (at $V_{GS}=-10V$)	11	m Ω
$R_{DS(ON)}$ (at $V_{GS}=-4.5V$)	15	m Ω



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}	± 20	V
Continuous Drain Current ¹	$I_D@T_C=25^\circ\text{C}$	-50	A
Continuous Drain Current ¹	$I_D@T_C=100^\circ\text{C}$	-32	A
Pulsed Drain Current ²	I_{DM}	-204	A
Single Pulse Avalanche Energy ³	EAS	100	mJ
Avalanche Current	I_{AS}	-35	A
Total Power Dissipation ⁴	P_D	52	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	$R_{\theta JA}$	---	67	$^\circ\text{C/W}$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	---	2.4	$^\circ\text{C/W}$

Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-40	---	---	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-20A$	---	8.5	11	$m\Omega$
		$V_{GS}=-4.5V, I_D=-15A$	---	11	15	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.2	---	-2.5	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-32V, V_{GS}=0V$	---	---	-1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
Total Gate Charge	Q_g	$V_{DS}=-20V, V_{GS}=-10V, I_D=-20A$	---	68	---	nC
Gate-Source Charge	Q_{gs}		---	11	---	
Gate-Drain Charge	Q_{gd}		---	17	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DS}=-20V, V_{GS}=-10V, R_G=6\Omega, I_D=-20A$	---	15	---	ns
Rise Time	T_r		---	24	---	
Turn-Off Delay Time	$T_{d(off)}$		---	130	---	
Fall Time	T_f		---	54	---	
Input Capacitance	C_{iss}	$V_{DS}=-20V, V_{GS}=0V, f=1\text{MHz}$	---	3500	---	pF
Output Capacitance	C_{oss}		---	260	---	
Reverse Transfer Capacitance	C_{rss}		---	210	---	

Drain-Source Diode Characteristics

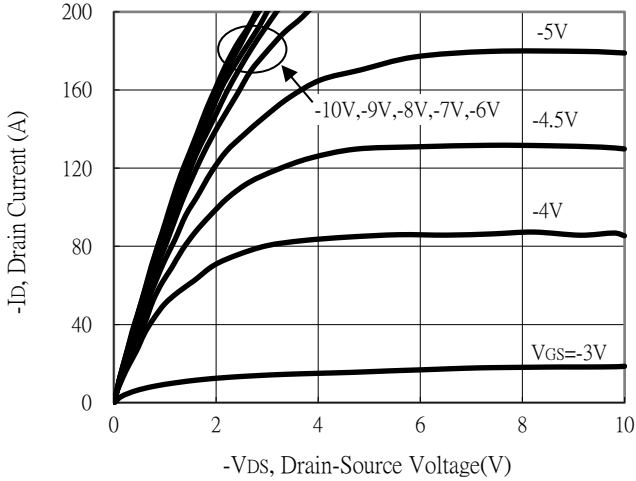
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ¹	I_S		---	---	-43	A
Diode Forward Voltage ²	V_{SD}	$V_{GS}=0V, I_S=-20A, T_J=25^\circ\text{C}$	---	---	-1.2	V
Reverse Recovery Time	t_{rr}	$I_F=-20A, di/dt=100A/\mu s, T_J=25^\circ\text{C}$	---	20	---	nS
Reverse Recovery Charge	Q_{rr}		---	16	---	nC

Note:

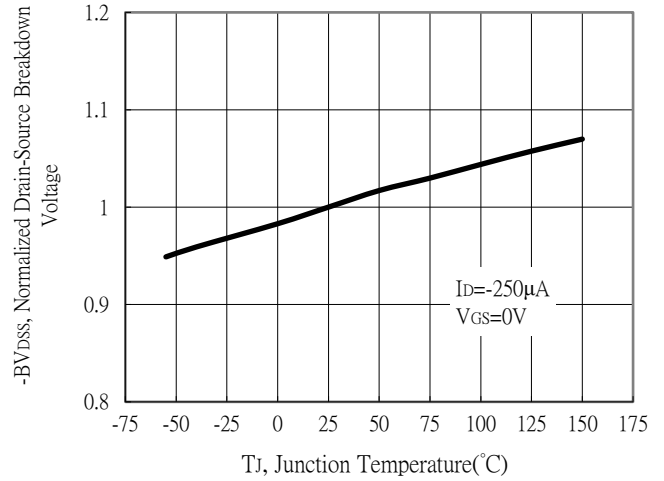
1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
3. The EAS data shows Max. rating. The test condition is $V_{DD}=-20V, V_{GS}=-10V, L=0.5\text{mH}$
4. The power dissipation is limited by 150°C junction temperature

Typical Characteristics

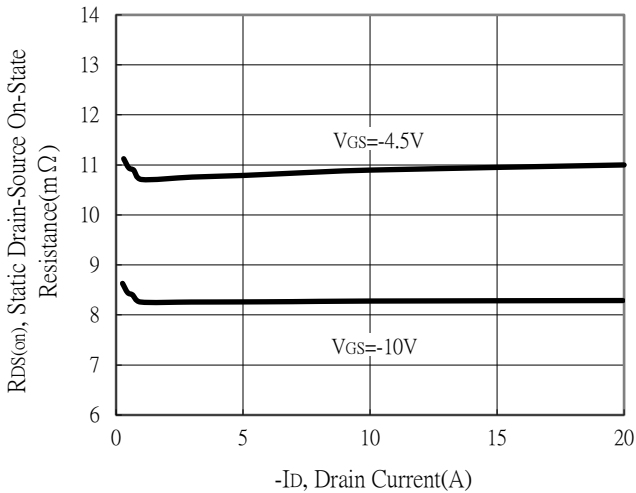
Typical Output Characteristics



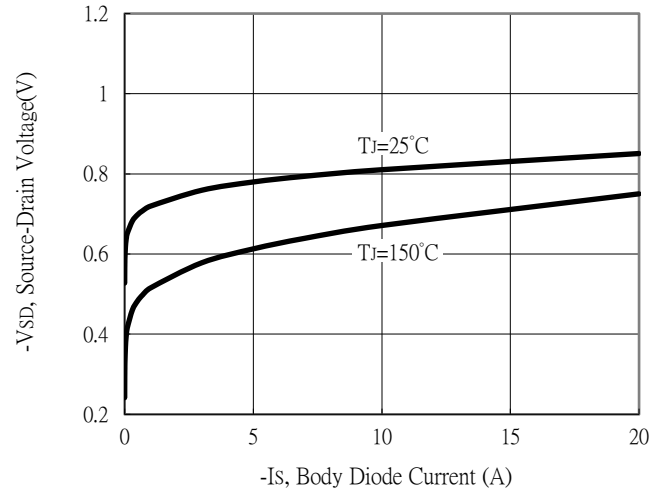
Breakdown Voltage vs Ambient Temperature



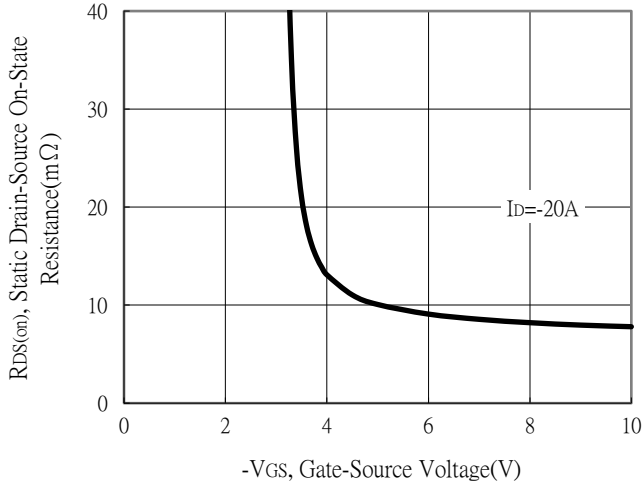
Static Drain-Source On-State resistance vs Drain Current



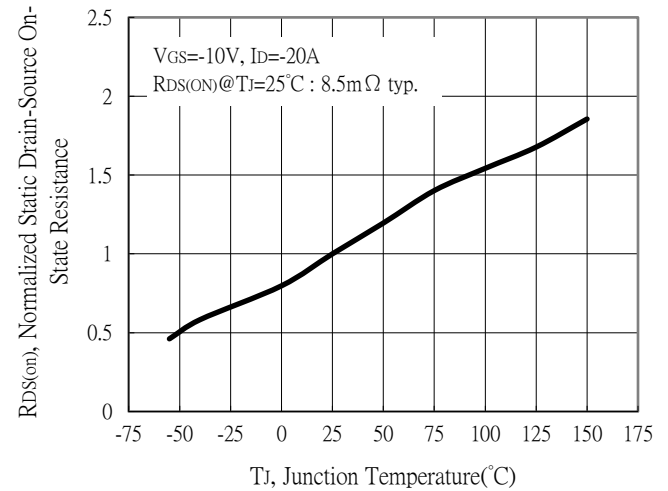
Body Diode Current vs Source-Drain Voltage

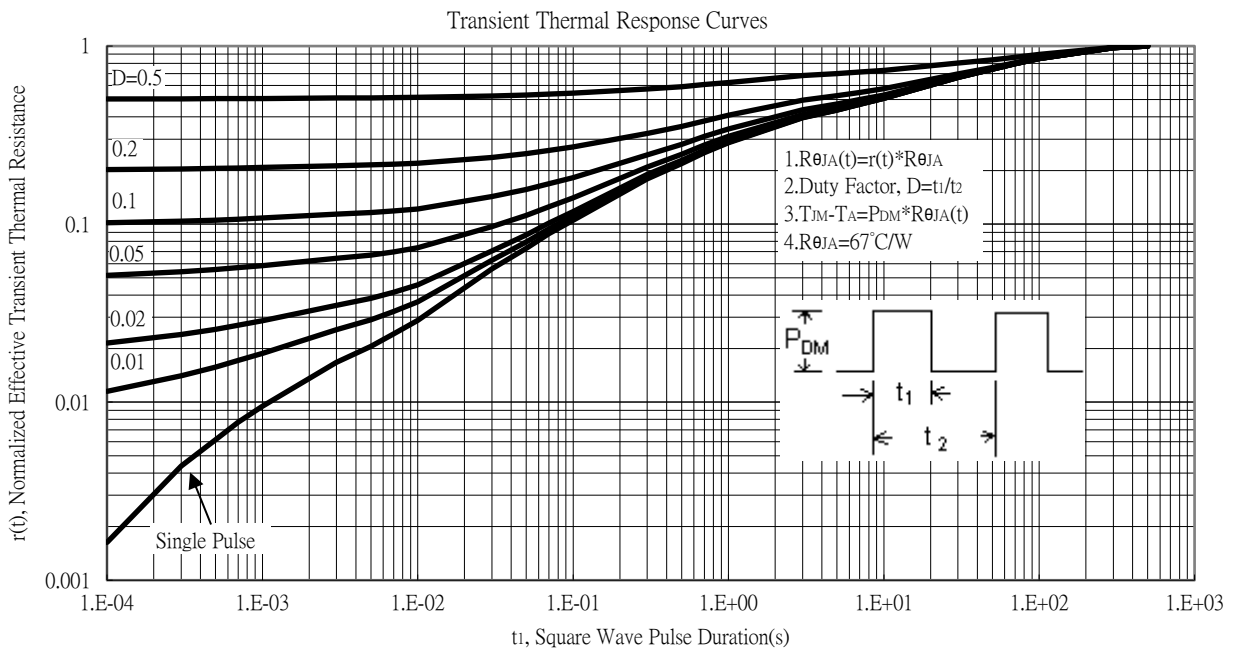
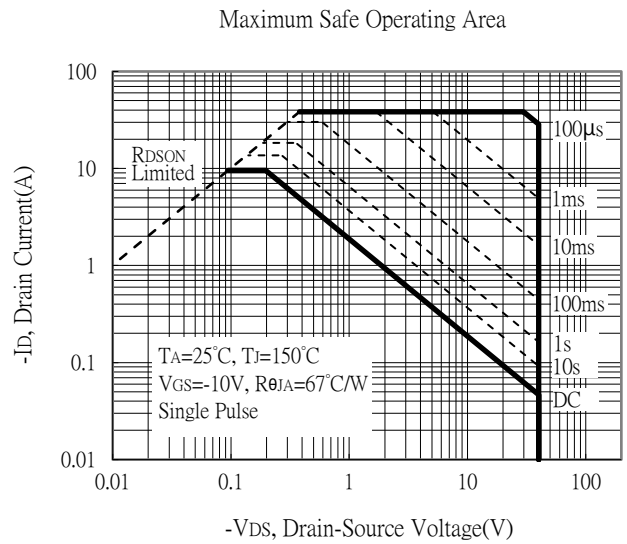
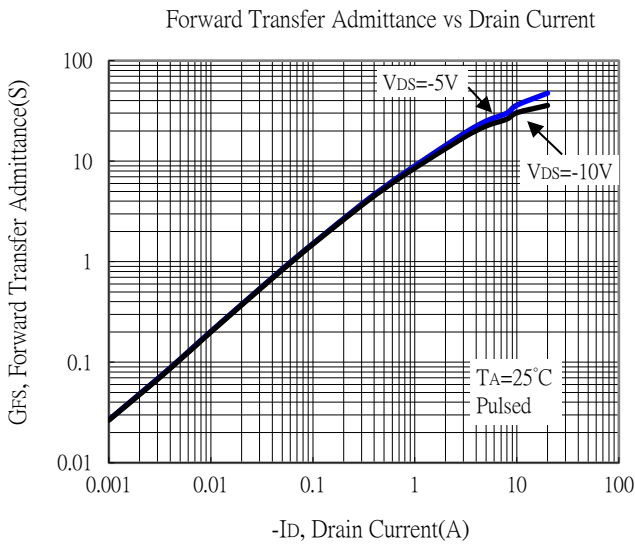
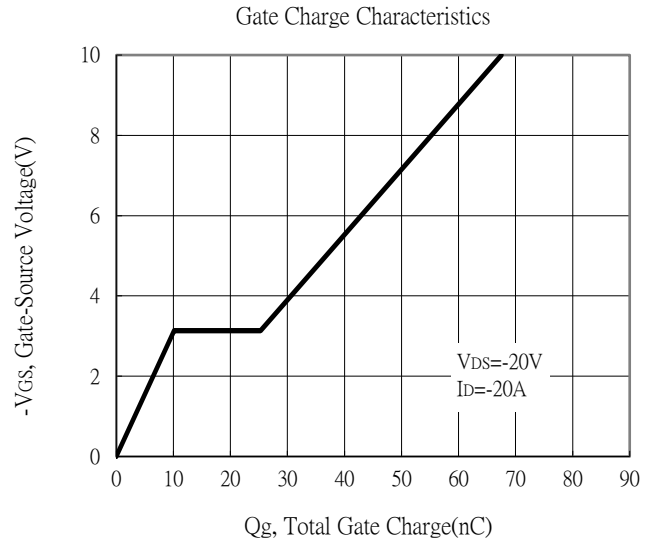
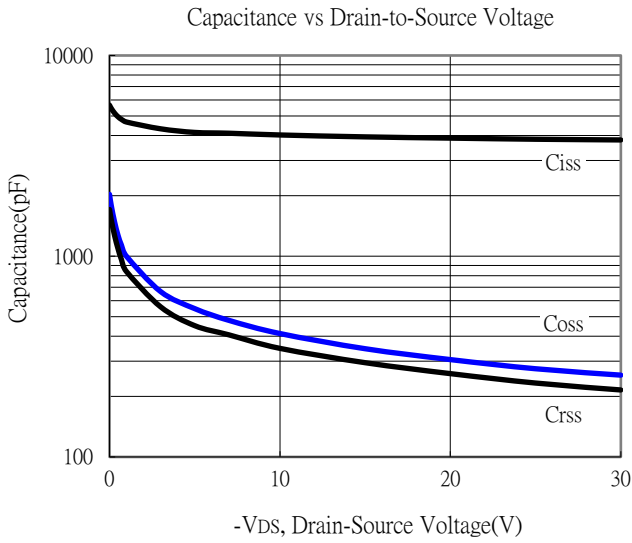


Static Drain-Source On-State Resistance vs Gate-Source Voltage

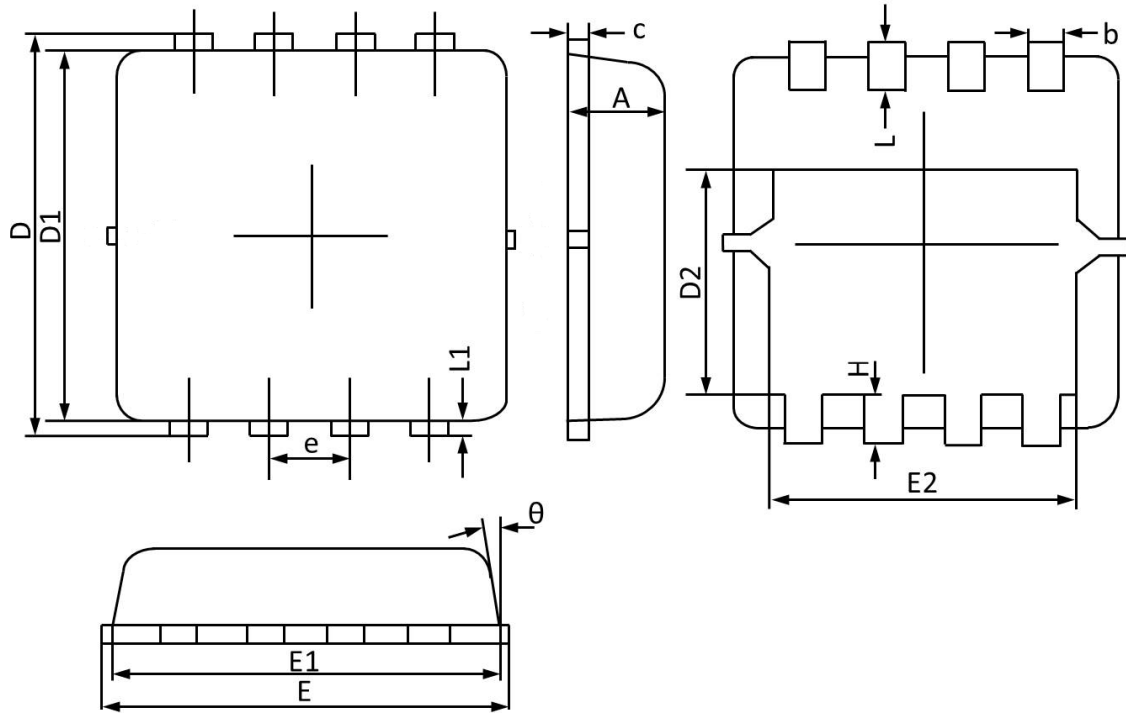


Drain-Source On-State Resistance vs Junction Temperature





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°