

Features

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

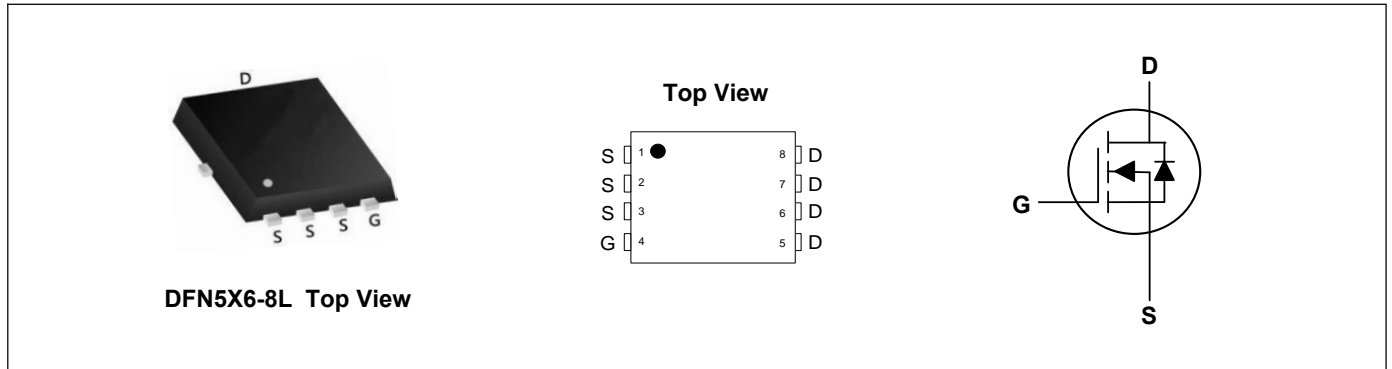
Applications

- High Frequency Point-of-Load Synchronous Buck Converter
- Networking DC-DC Power System
- LCD/LED Back Light

Product Summary



V_{DS}	100	V
I_D	34	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	11.5	m Ω
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	15	m Ω



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

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, $V_{GS} @ 10V^1$	$I_D @ T_C=25^\circ C$	34	A
Continuous Drain Current, $V_{GS} @ 10V^1$	$I_D @ T_C=100^\circ C$	31	A
Pulsed Drain Current ²	I_{DM}	120	A
Single Pulse Avalanche Energy ³	EAS	33	mJ
Avalanche Current	I_{AS}	15	A
Total Power Dissipation ⁴	$P_D @ T_C=25^\circ C$	56.5	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	$R_{\theta JA}$	---	50	$^\circ C/W$
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	---	2.2	$^\circ C/W$

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
Static Drain-Source On-Resistance ²	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	---	8	11.5	$m\Omega$
		$V_{GS}=4.5V, I_D=10A$	---	11.6	15	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	---	2.4	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	μA
		$V_{DS}=80V, V_{GS}=0V, T_J=55^\circ\text{C}$	---	---	5	
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
Total Gate Charge (10V)	Q_g	$V_{DS}=50V, V_{GS}=10V, I_D=20A$	---	43	---	nC
Total Gate Charge (4.5V)	Q_g		---	18.5	---	
Gate-Source Charge	Q_{gs}		---	8.5	---	
Gate-Drain Charge	Q_{gd}		---	10.3	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=50V, V_{GS}=10V, R_G=3.3\Omega, I_D=20A$	---	10	---	ns
Rise Time	T_r		---	7	---	
Turn-Off Delay Time	$T_{d(off)}$		---	50	---	
Fall Time	T_f		---	11	---	
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V, f=1\text{MHz}$	---	3150	---	μF
Output Capacitance	C_{oss}		---	695	---	
Reverse Transfer Capacitance	C_{rss}		---	25	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ^{1,5}	I_S	$V_G=V_D=0V$, Force Current	---	---	34	A
Diode Forward Voltage ²	V_{SD}	$V_{GS}=0V, I_S=1A, T_J=25^\circ\text{C}$	---	---	1.2	V
Reverse Recovery Time	t_{rr}	$I_F=20A, di/dt=100A/\mu s, T_J=25^\circ\text{C}$	---	45	---	nS
Reverse Recovery Charge	Q_{rr}		---	165	---	nC

Note:

- The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- The data tested by pulsed, pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- The EAS data shows Max. rating. The test condition is $V_{DD}=25V, V_{GS}=10V, L=0.3mH, I_{AS}=15A$
- The power dissipation is limited by 150°C junction temperature
- The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation.

Typical Characteristics

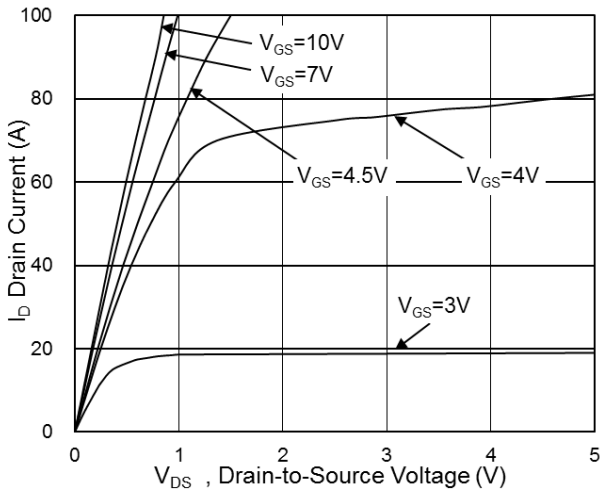


Fig.1 Typical Output Characteristics

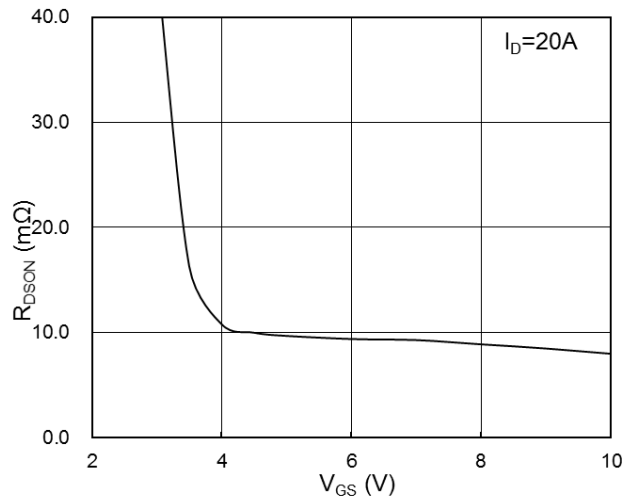


Fig.2 On-Resistance vs. G-S Voltage

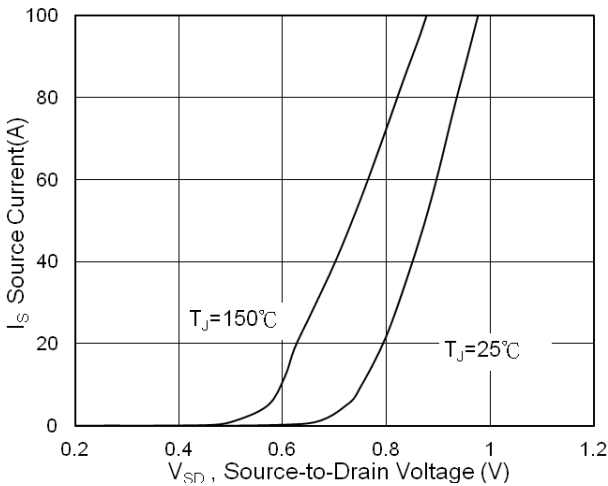


Fig.3 Source Drain Forward Characteristics

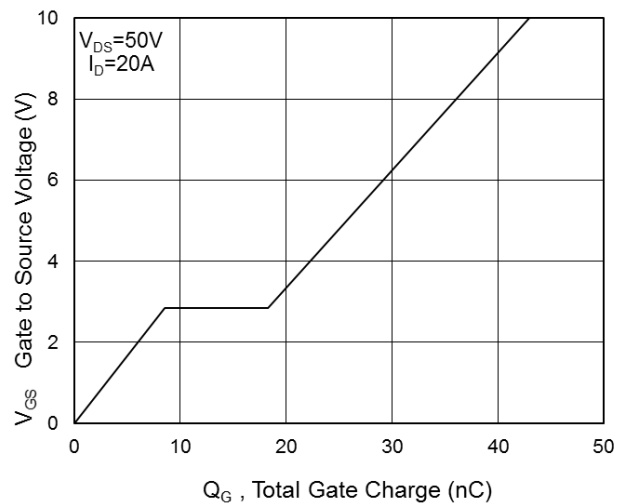


Fig.4 Gate-Charge Characteristics

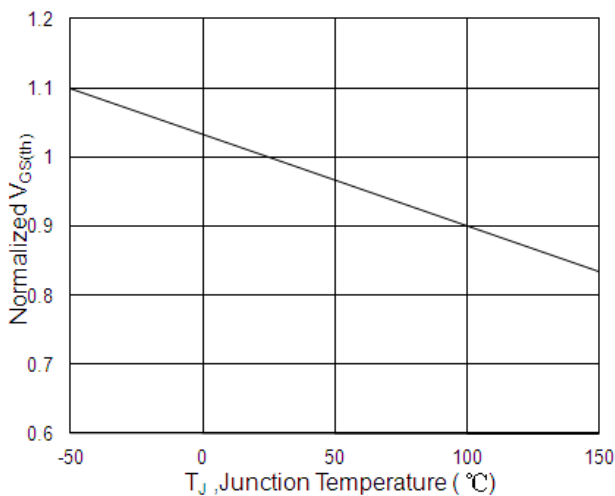


Fig.5 Normalized V_{GS(th)} vs. T_J

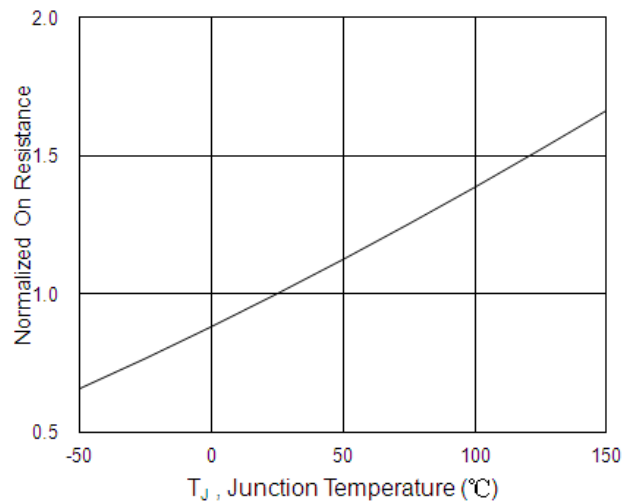


Fig.6 Normalized R_{DSON} vs. T_J

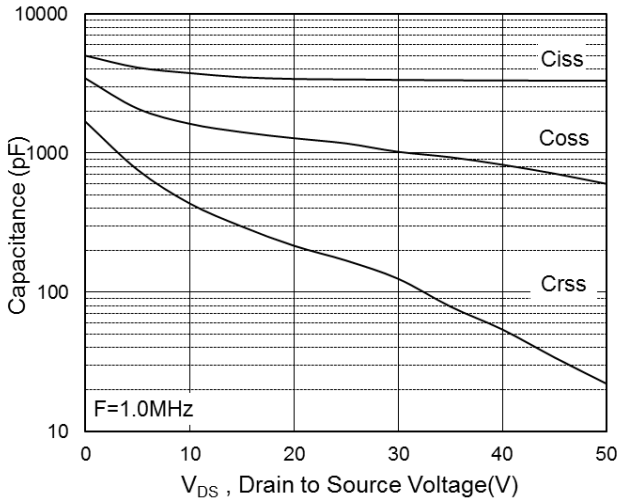


Fig.7 Capacitance

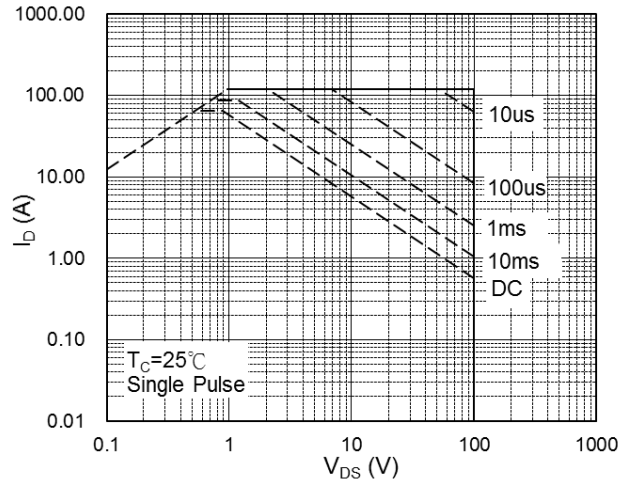


Fig.8 Safe Operating Area

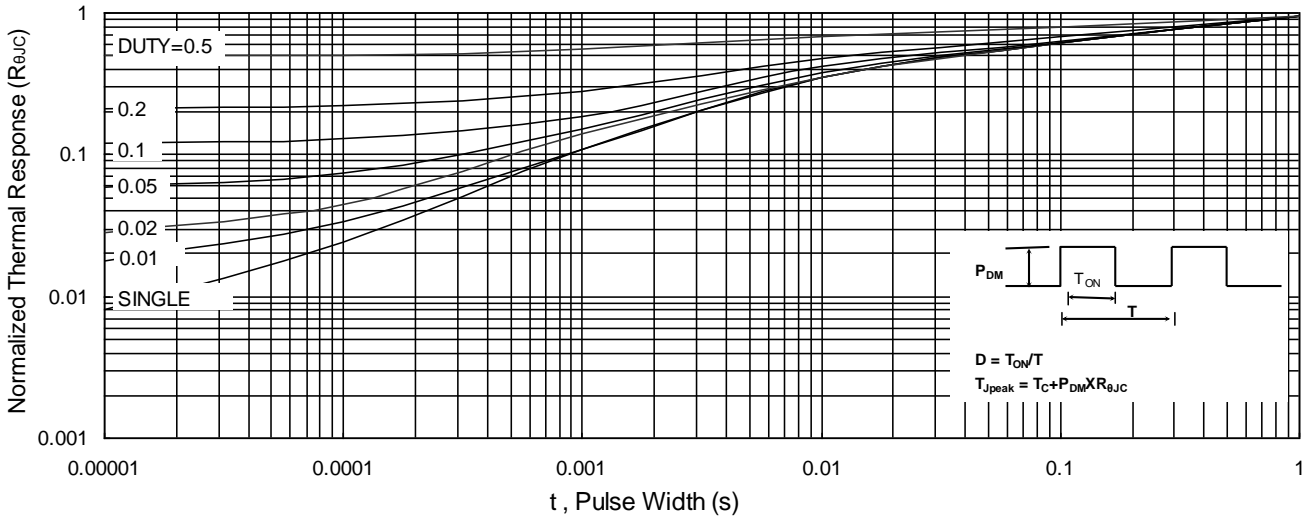


Fig.9 Normalized Maximum Transient Thermal Impedance

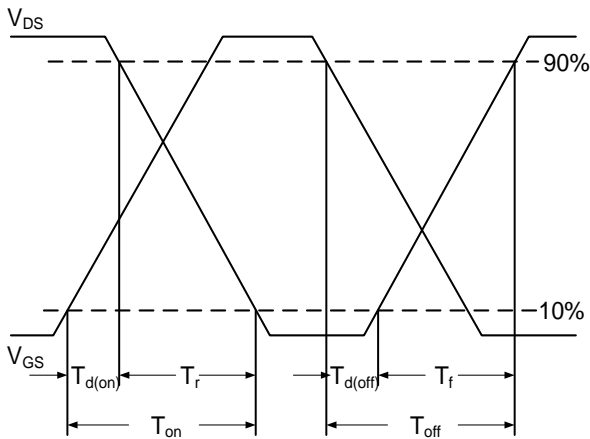


Fig.10 Switching Time Waveform

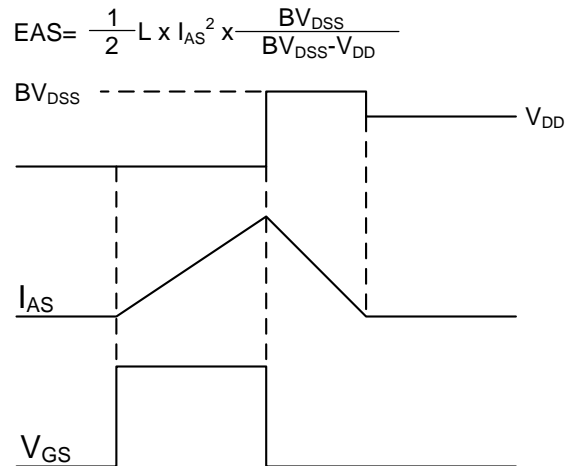
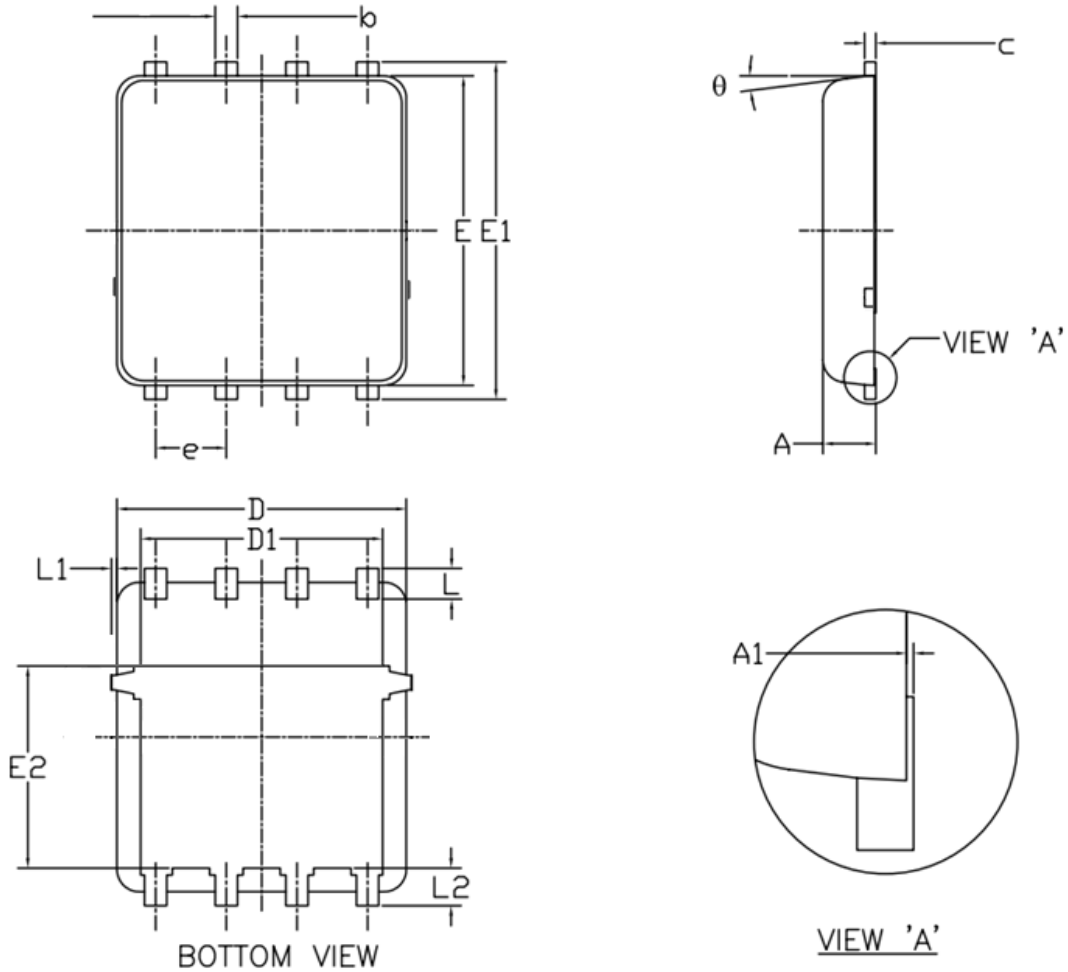


Fig.11 Unclamped Inductive Switching Waveform

DFN5X6-8L Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	0.90	1.00	1.20	E1	5.90	6.10	6.35
A1	0.00	--	0.05	E2	3.38	3.58	3.92
b	0.30	0.40	0.51	e	1.27 BSC		
c	0.20	0.25	0.33	L	0.51	0.61	0.71
D	4.80	4.90	5.40	L1	--	--	0.15
D1	3.61	4.00	4.25	L2	0.41	0.51	0.61
E	5.65	5.80	6.06	θ	0°	--	12°