

Features

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

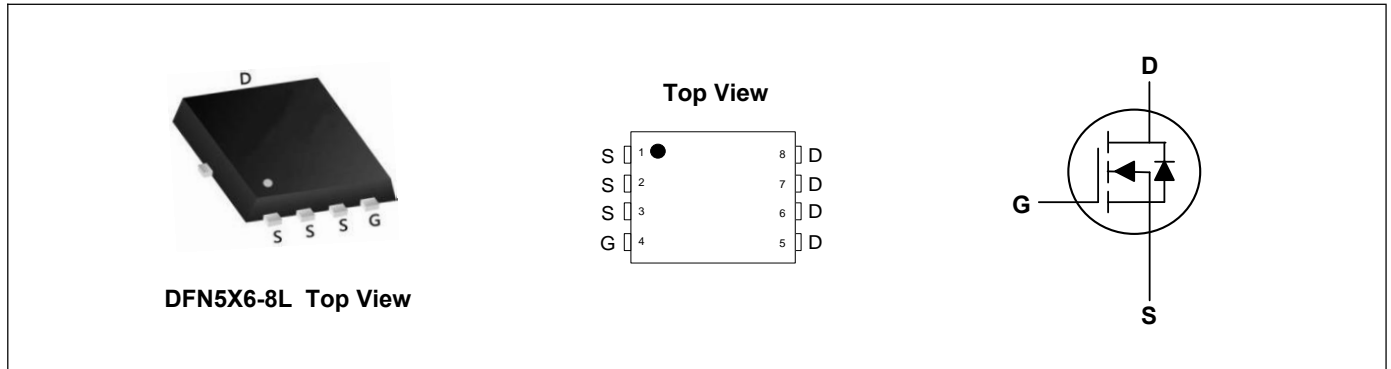
Product Summary



V_{DS}	100	V
I_D	40	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	23	m Ω
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	27	m Ω

Applications

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



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	I_D	40	A
Continuous Drain Current	$I_D@T_C=100^\circ C$	28.3	A
Pulsed Drain Current	I_{DM}	160	A
Single Pulse Avalanche Energy ³	EAS	200	mJ
Total Power Dissipation	P_D	50	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-Case ¹	$R_{\theta JC}$	---	2.5	$^\circ C/W$

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	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	---	18	23	$m\Omega$
		$V_{GS}=4.5V, I_D=20A$	---	22	27	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	2.0	2.8	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=20A$	---	35	---	S
Total Gate Charge	Q_g	$V_{DS}=50V, V_{GS}=10V, I_D=20A$	---	26	---	nC
Gate-Source Charge	Q_{gs}		---	7.4	---	
Gate-Drain Charge	Q_{gd}		---	3.8	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=50V, I_D=20A,$ $V_{GS}=10V, R_G=1.6\Omega$	---	6	---	ns
Rise Time	T_r		---	2	---	
Turn-Off Delay Time	$T_{d(off)}$		---	18	---	
Fall Time	T_f		---	2	---	
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V, f=1\text{MHz}$	---	1600	---	pF
Output Capacitance	C_{oss}		---	139	---	
Reverse Transfer Capacitance	C_{rss}		---	11	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Continuous Source Current ²	I_S		---	---	40	A
Diode Forward Voltage ¹	V_{SD}	$V_{GS}=0V, I_S=40A, T_J=25^\circ\text{C}$	---	---	1.2	V
Reverse Recovery Time	t_{rr}	$I_F=20A, di/dt=100A/\mu s,$ $T_J=25^\circ\text{C}$	---	---	26	nS
Reverse Recovery Charge	Q_{rr}		---	---	98	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 $\leq 2\%$
- ESD condition: $T_J=25^\circ\text{C}, V_{DD}=20V, V_{GS}=10V, L=0.5\text{mH}, R_g=25\Omega$

Typical Characteristics

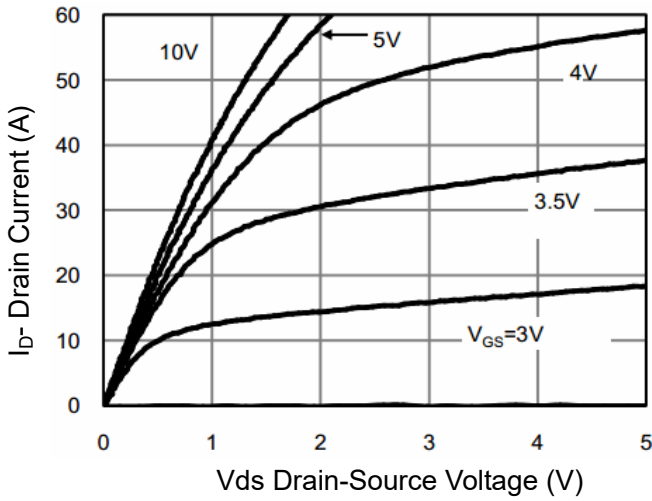


Figure 1 Output Characteristics

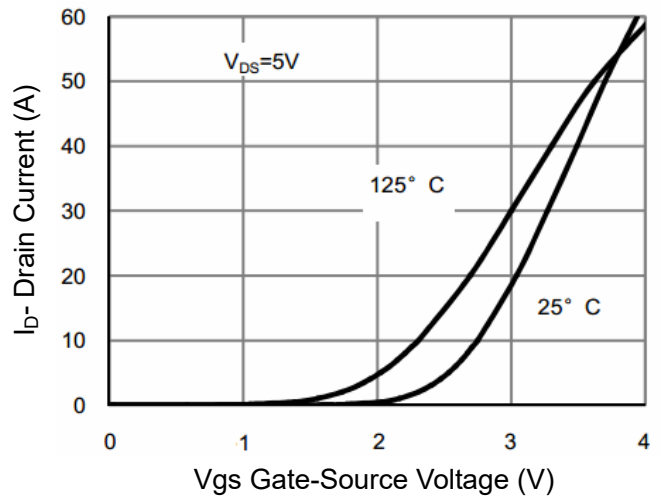


Figure 2 Transfer Characteristics

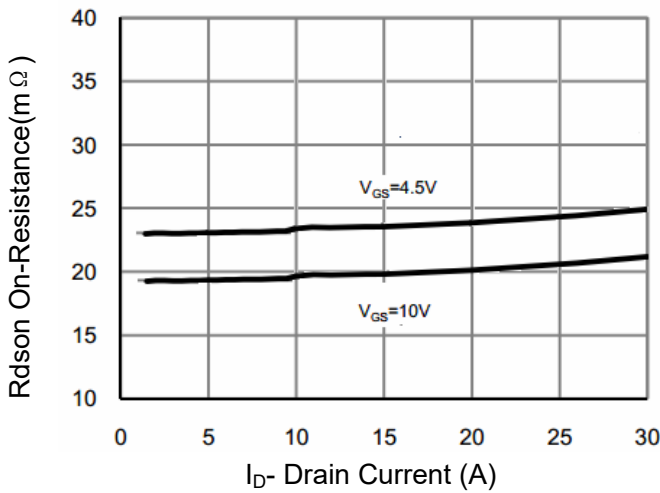


Figure 3 Rdson- Drain Current

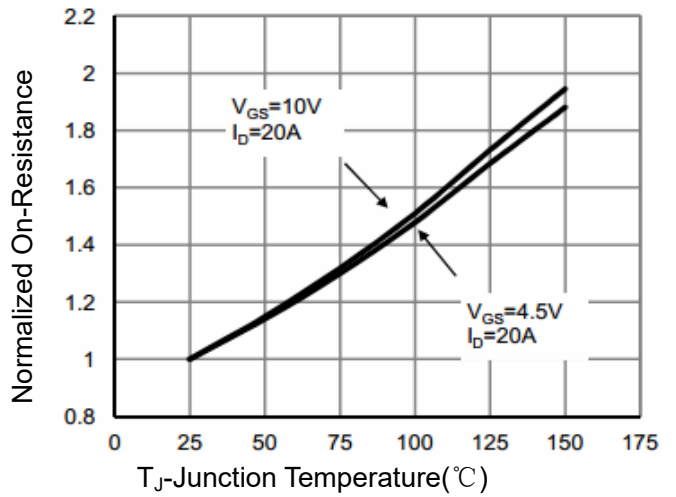


Figure 4 Rdson-Junction Temperature

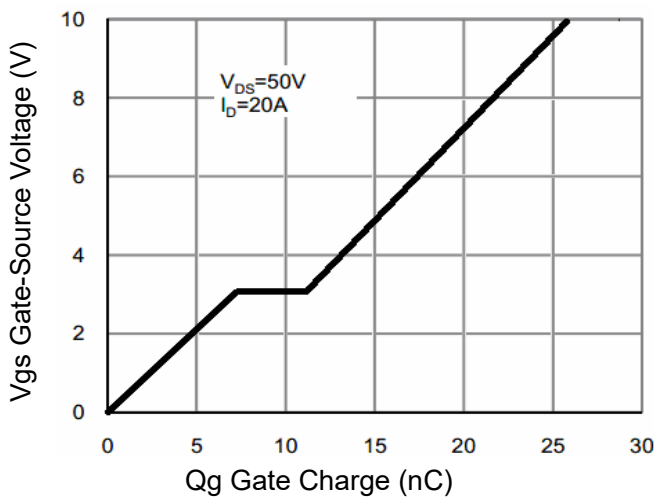


Figure 5 Gate Charge

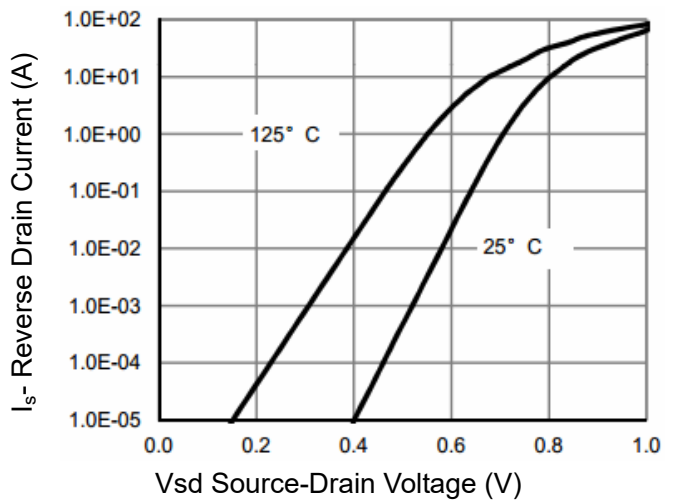


Figure 6 Source- Drain Diode Forward

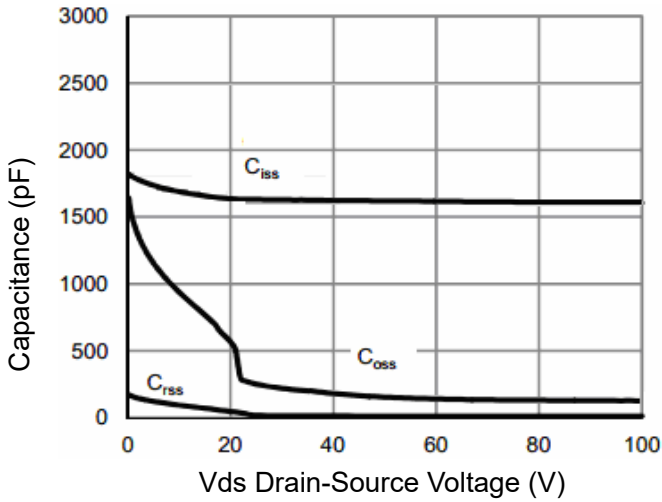


Figure 7 Capacitance vs Vds

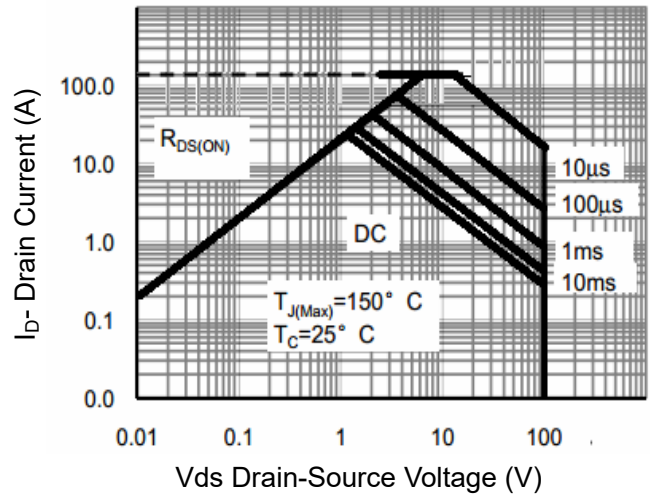


Figure 8 Safe Operation Area

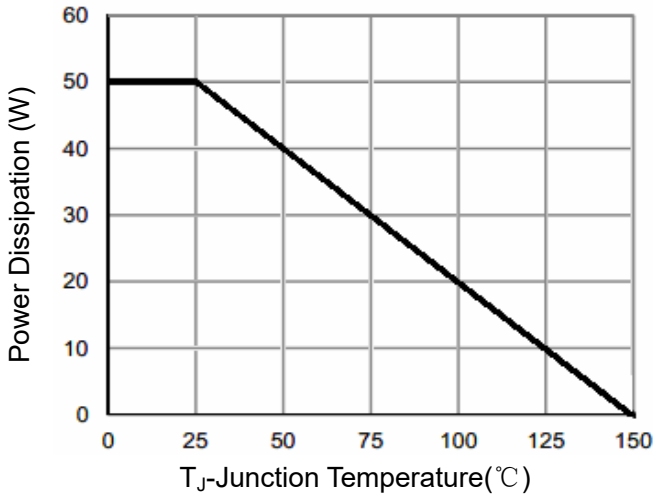


Figure 9 Power De-rating

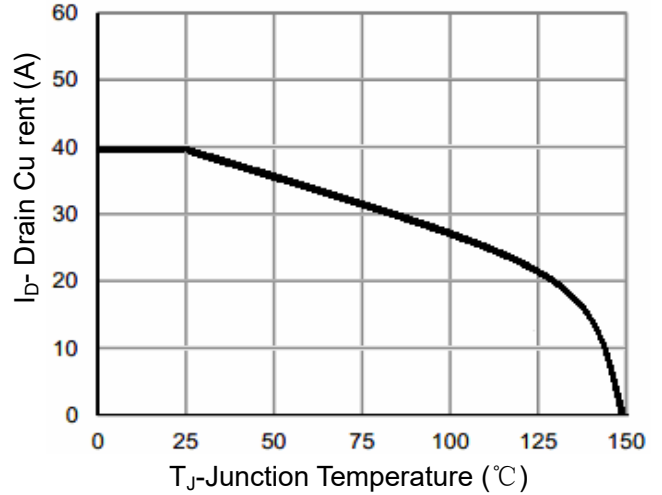


Figure 10 Current De-rating

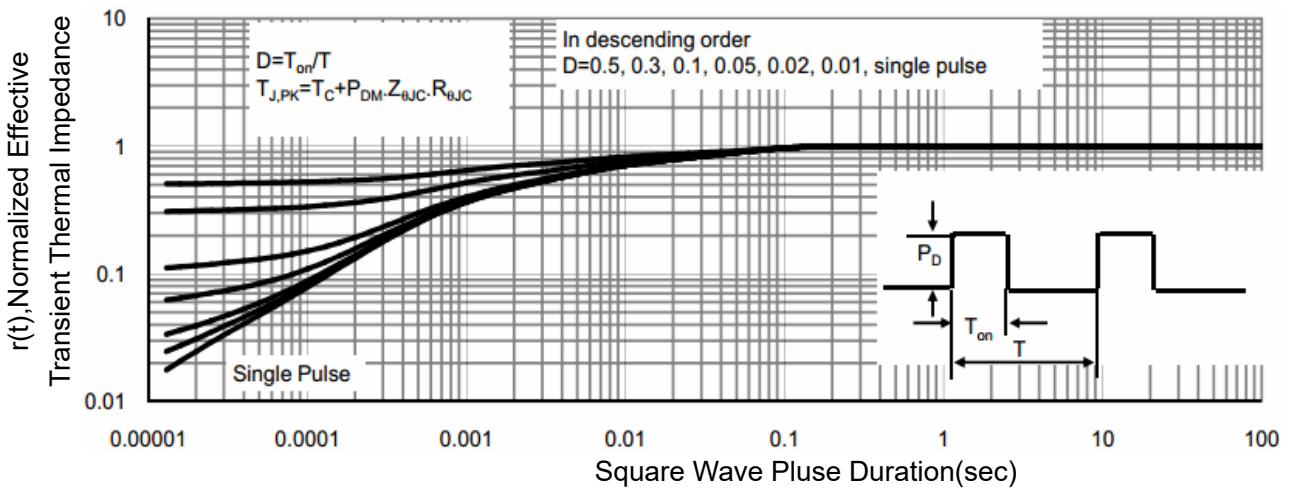
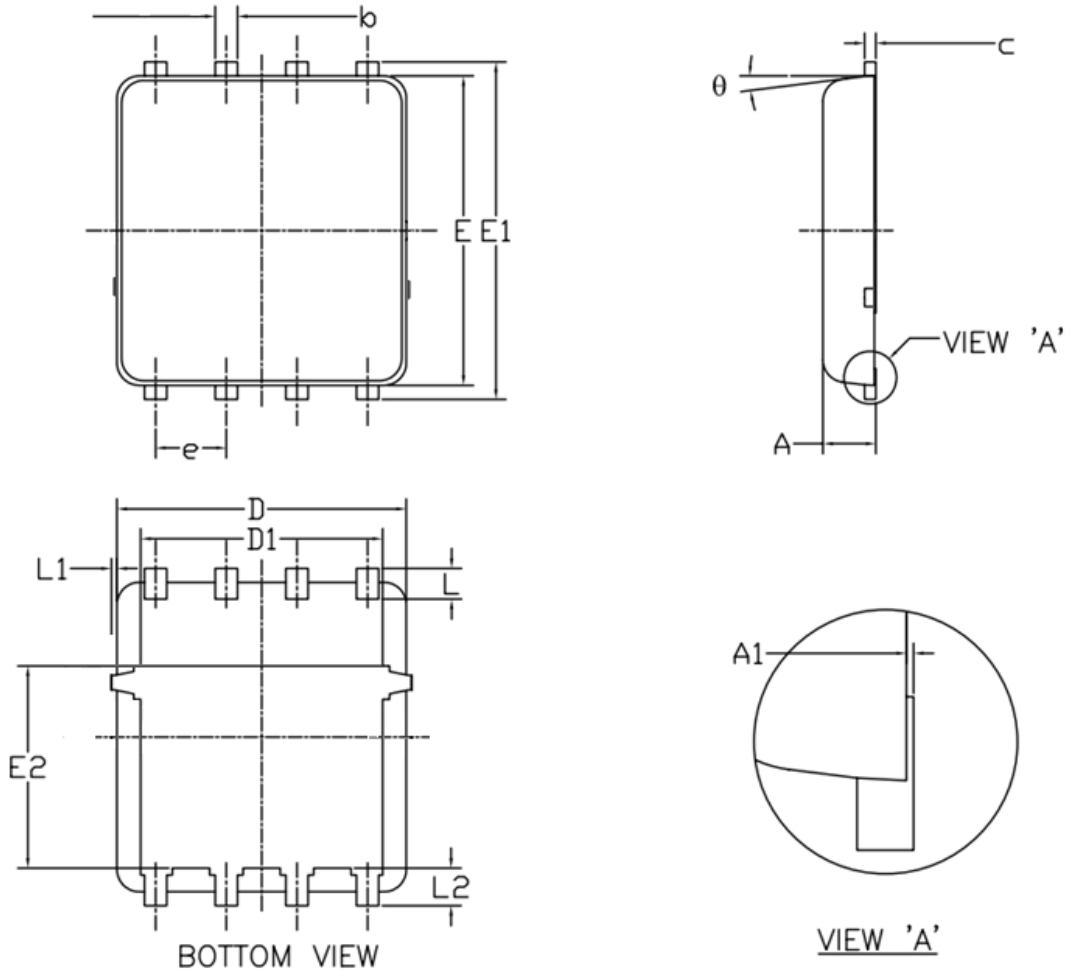


Figure 11 Normalized Maximum Transient Thermal Impedance

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°