



Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)} \max$	$I_D \max$
60V	$<6.3m\Omega @V_{GS}=10V$	91A
	$<9.0m\Omega @V_{GS}=4.5V$	

Description and Applications

- Low Gate Charge
- 100% UIS Tested, 100% DVDS Tested
- High Power and current handing capability
- Lead free product is acquired
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Ordering Information

Part Number	Package Type	Package Qty
CFN4R5N60A	PDFN5x6	5,000/Tape & Reel

Marking Information



Green product

CFXP--LOGO

4R5N60A--Part Number

F-Fab location

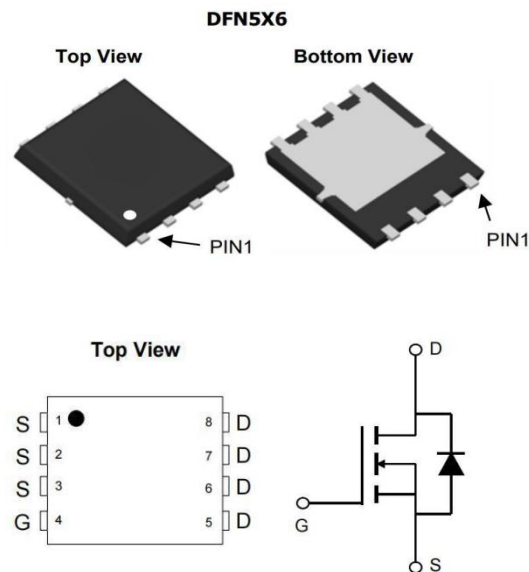
A-Assembly location

Y--Year

W--Week

LT--Lot sequence

Package & Internal Circuit



Absolute Maximum Rating ($T_{amb}=25^{\circ}C$ unless otherwise noted)

Parameter		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	± 20	V
Drain Current - Continuous	$T_C=25^{\circ}C$	I_D	91	A
	$T_C=100^{\circ}C$		57	A
Pulsed Drain Current		I_{DM}	360	A
Single Pulse Avalanche Energy $L=0.5mH$		E_{AS}	289	mJ
Power Dissipation	$T_C=25^{\circ}C$	P_D	88	W
	Derate above $25^{\circ}C$		35	W/ $^{\circ}C$
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^{\circ}C$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Case	$R_{\theta JC}$		1.42	°C/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Static Parameters						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D = 250μA, V _{GS} =0V	60			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =60V, V _{GS} =0V T _J =25℃			1	μA
		V _{DS} =60V,V _{GS} =0V T _J =125℃			100	μA
I _{GSS}	Gate-Body leakage current	V _{DS} =0V, V _{GS} = ±20V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0		2.5	V
R _{DS(ON)}	Drain-Source on-Resistance	V _{GS} =10V, I _D =20A		4.5	6.3	mΩ
		V _{GS} =4.5V, I _D =15A		6.8	9.0	mΩ
g _{FS}	Forward Trans Conductance	V _{DS} =10V, I _D =20A		39		S
V _{SD}	Body Diode Forward Voltage	I _S = 20A,V _{GS} = 0V			1.2	V
I _S	Source-Drain Current (Body Diode)				91	A
Dynamic parameters						
C _{iss}	Input Capacitance	V _{GS} =0V V _{DS} =30V f=1.0MHz		2133		pF
C _{oss}	Output Capacitance			399		pF
C _{rss}	Reverse Transfer Capacitance			79.2		pF
R _g	Gate resistance	f=1.0MHz		1.3		Ω
Switching Parameters						
Q _g	Total Gate Charge	V _{GS} =10V V _{DS} =30V I _D =20A		40.3		nC
Q _{gs}	Gate Source Charge			8.0		nC
Q _{gd}	Gate Drain Charge			7.3		nC
t _{D(on)}	Turn-On Delay Time	V _{GS} =10V V _{DS} =30V R _L =1.5Ω R _G =6Ω		15.6		ns
t _r	Turn-On Rise Time			3.1		ns
t _{D(off)}	Turn-Off Delay Time			33.6		ns
t _f	Turn-Off Fall Time			5.6		ns
t _{rr}	Body Diode Reverse Recovery Time	I _F =20A di/dt =100 A/μs		42.3		ns
Q _{rr}	Body Diode Reverse Recovery Charge			52.9		nC

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

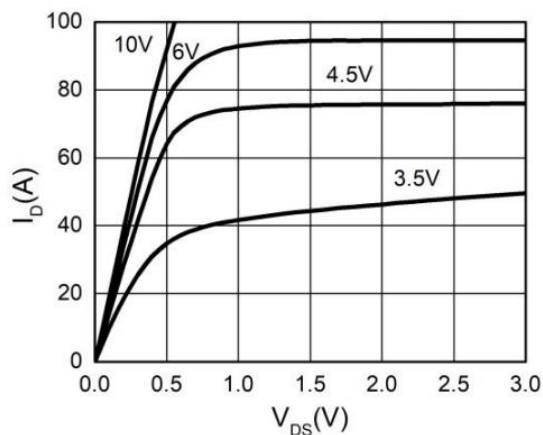


Figure 1: Output Characteristics

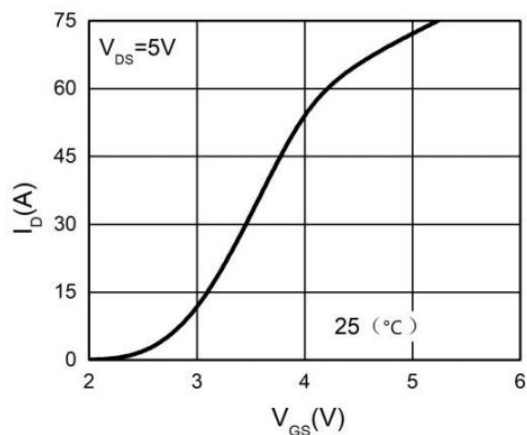


Figure 2: Transfer Characteristics

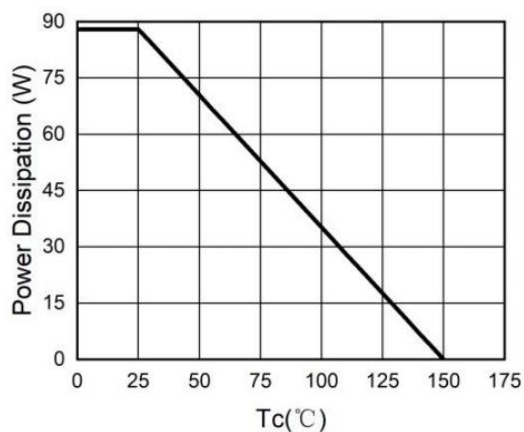


Figure 3: Power Dissipation

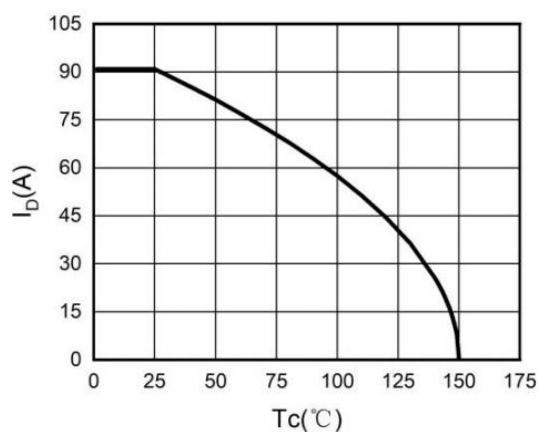


Figure 4: Drain Current

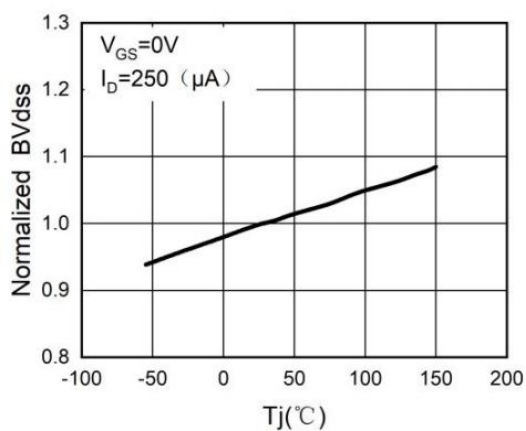


Figure 5: BV_{DS} vs Junction Temperature

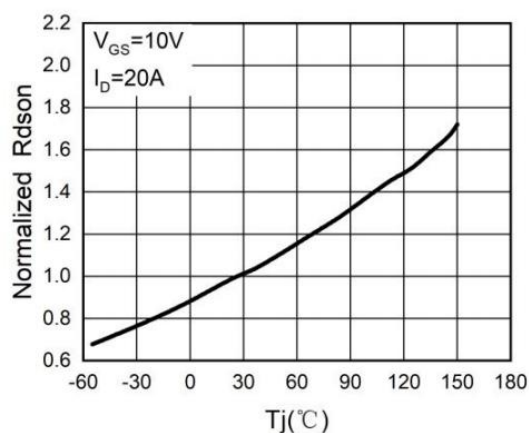


Figure 6: $R_{DS(ON)}$ vs Junction Temperature

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

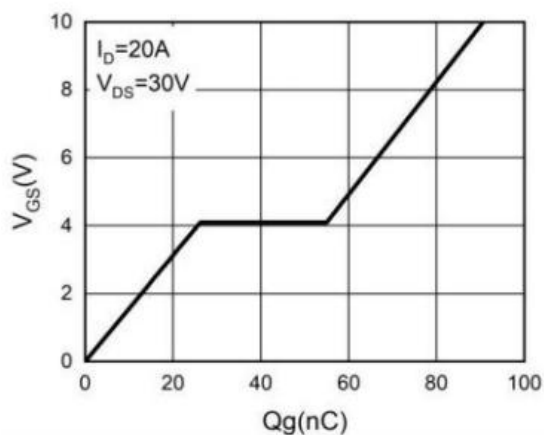


Figure 7: Gate Charge Waveforms

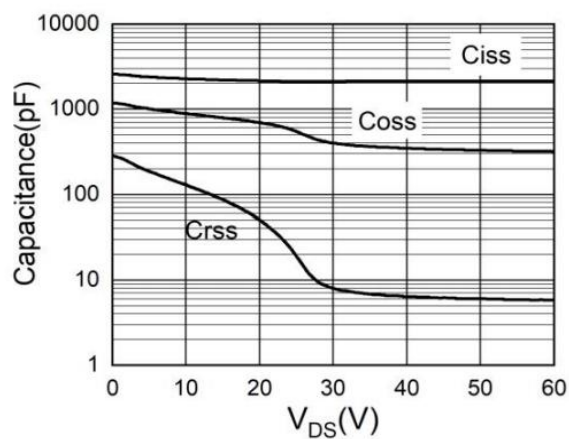


Figure 8: Capacitance Characteristics

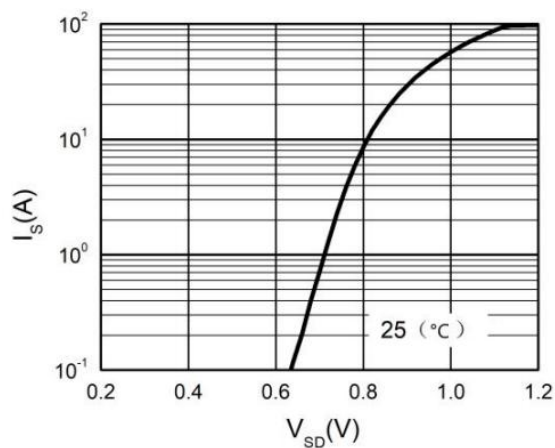


Figure 9: Body-Diode Characteristics

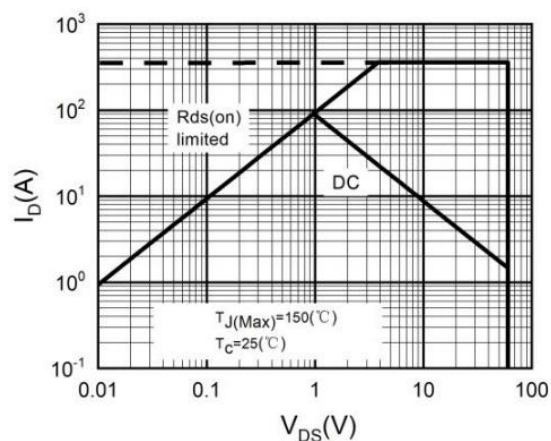
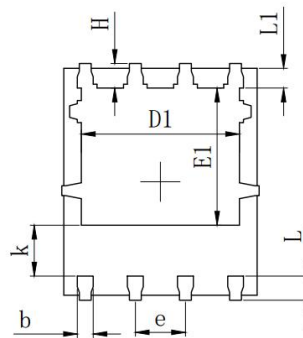
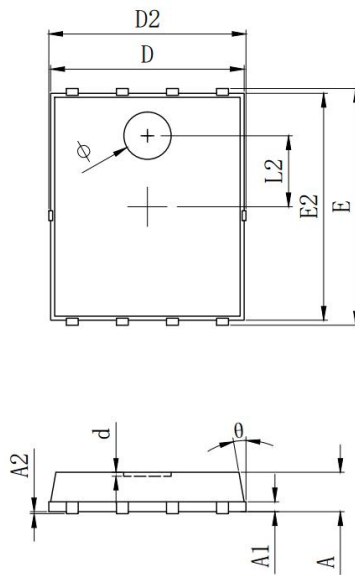


Figure 10: Maximum Safe Operating Area

DFN5x6 Package Information



SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.900	1.000	1.100
A1	0.254 REF.		
A2	0°~0.05		
D	4.824	4.900	4.976
D1	3.910	4.010	4.110
D2	4.924	5.000	5.076
E	5.924	6.000	6.076
E1	3.375	3.475	3.575
E2	5.674	5.750	5.826
b	0.350	0.400	0.450
e	1.270 TYP.		
L	0.534	0.610	0.686
L1	0.424	0.500	0.576
L2	1.800 REF.		
k	1.190	1.290	1.390
H	0.549	0.625	0.701
θ	8°	10°	12°
Φ	1.100	1.200	1.300
d			0.100

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L	0.534	0.610	0.686
L1	0.424	0.500	0.576
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k	1.190	1.290	1.390
H	0.549	0.625	0.701
θ	8°	10°	12°
Φ	1.100	1.200	1.300
d			0.100

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