

General Description

Low $R_{DS(ON)}$
RoHS and Halogen-Free Compliant

Applications

Load switch
PWM

General Features

$V_{DS} = 20V$ $I_D = 30A$

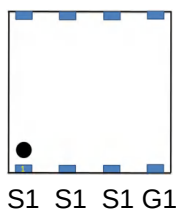
$R_{DS(ON)} = 5.8m\Omega$ (Typ.) @ $V_{GS} = 4.5V$

ESD protection >2000V

100% UIS Tested

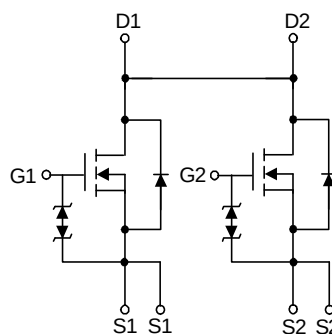
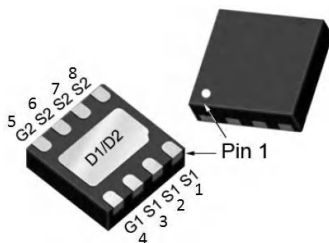
100% R_g Tested

S2 S2 S2 G2



Marking:3330

DF:DFN3x3-8L



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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 12	V
$I_D @ T_C = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 4.5V$	30	A
$I_D @ T_C = 100^\circ C$	Continuous Drain Current, $V_{GS} @ 4.5V$	18	A
I_{DM}	Pulsed Drain Current	111	A
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 175	$^\circ C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	---	38	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case	---	3.6	$^\circ C/W$

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERICTISCS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 19V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 12V, V_{DS} = 0V$			± 7	μA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5	0.7	0.9	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 8.0A$		5.8	6.7	m Ω
		$V_{GS} = 2.5V, I_D = 6.0A$		6.8	9.5	m Ω
Forward tranconductance	g_{FS}	$V_{DS} = 5V, I_D = 4A$		10		S
Diode forward voltage	V_{SD}	$I_S = 1.50A, V_{GS} = 0V$			1.0	V
DYNAMIC CHARACTERICTISCS						
Input Capacitance	C_{ISS}	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$		1827		pF
Output Capacitance	C_{OSS}			241.5		pF
Reverse Transfer Capacitance	C_{RSS}			225.4		pF
SWITCHING CHARACTERICTISCS						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = 4.5V, V_{DS} = 10V, I_D = 6A$ $R_{GEN} = 3\Omega$		6.4		ns
Turn-on rise time	t_r			24.5		ns
Turn-off delay time	$t_{d(off)}$			260.4		ns
Turn-off fall time	t_f			143		ns
Total Gate Charge	Q_g	$V_{DS} = 10V, V_{GS} = 4.5V, I_D = 6A$		25.2		nC
Gate-Source Charge	Q_{gs}			2.24		nC
Gate-Drain Charge	Q_{gd}			9.1		nC

Typical Characteristics

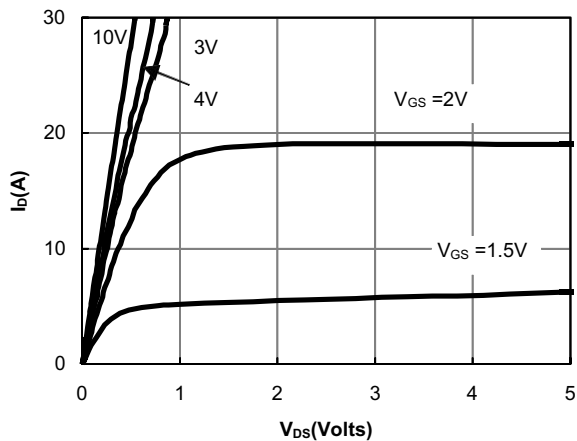


Figure 1: On-Regions Characteristi CS

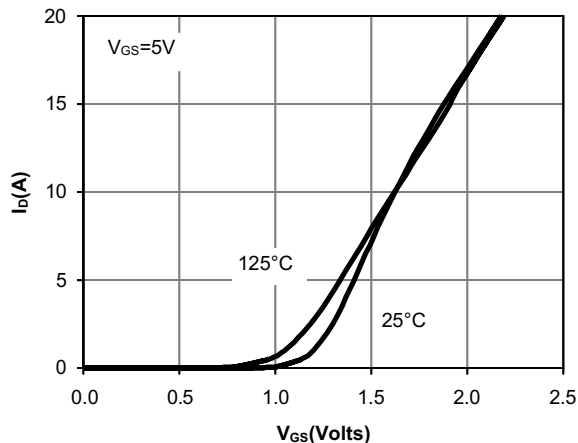


Figure 2: Transfer Characteristics

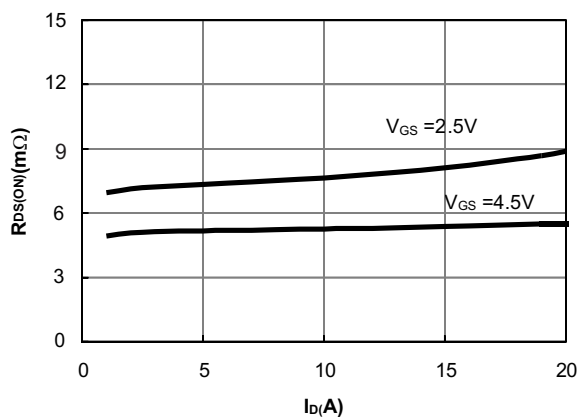


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

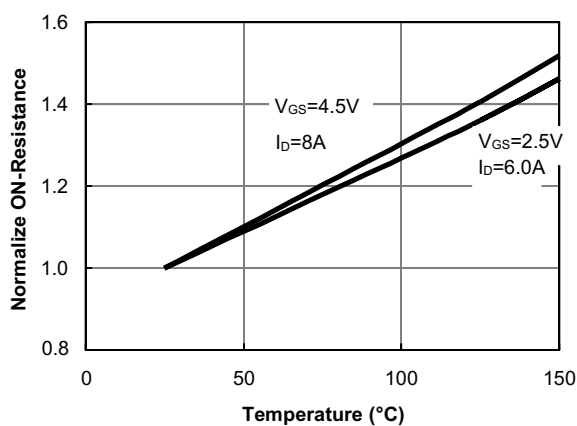


Figure 4: On-Resistance vs. Junction Temperature

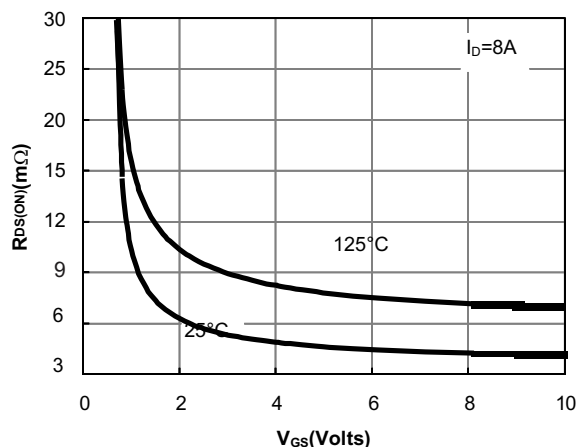


Figure 5: On-Resistance vs. Gate-Source Voltage

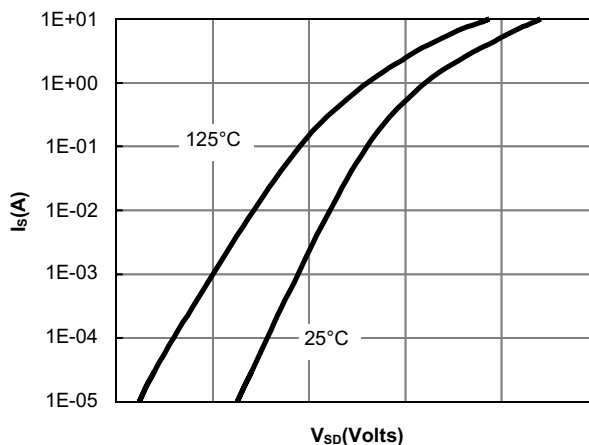


Figure 6: Body-Diode Characteristics

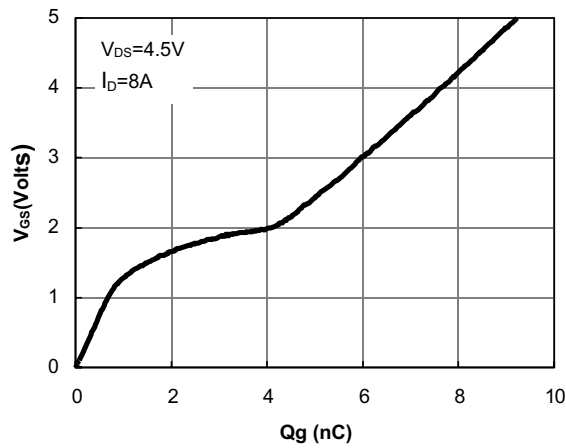


Figure 7: Gate-Charge Characteristics

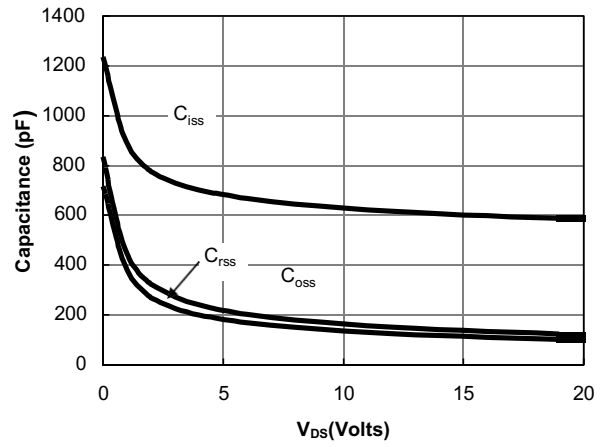


Figure 8: Capacitance Characteristics

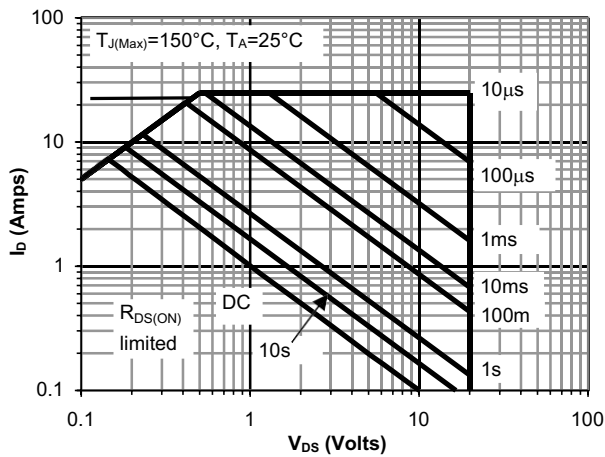


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

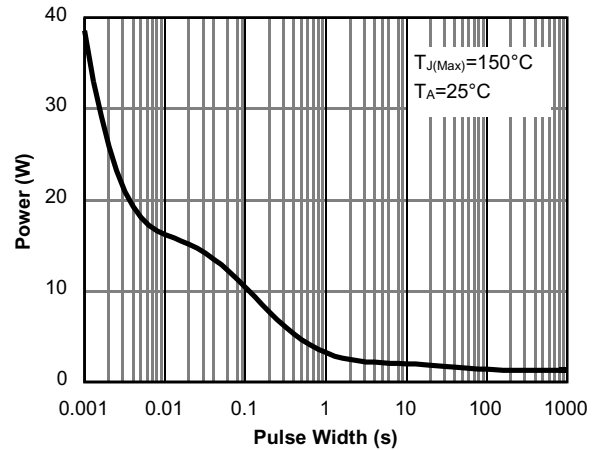


Figure 10: Single Pulse Power Rating Junction-to-Air

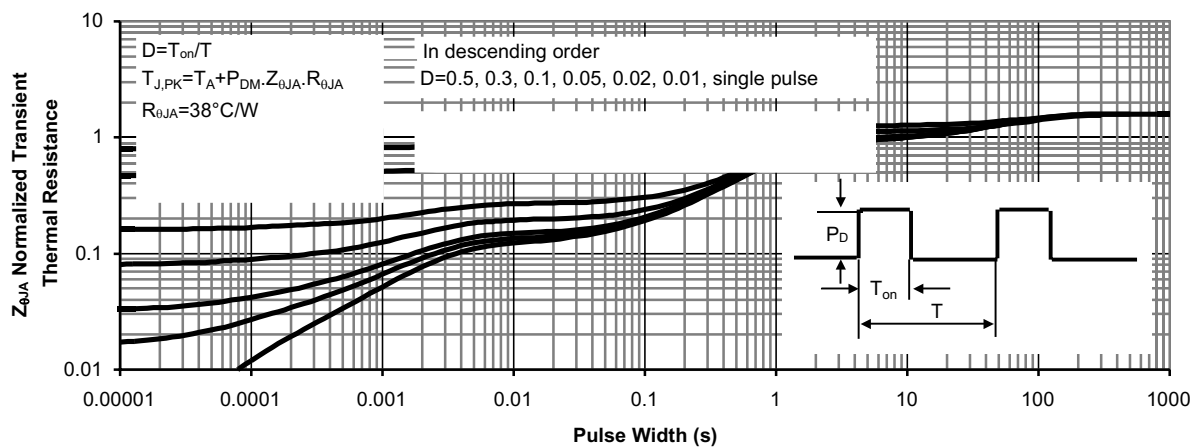
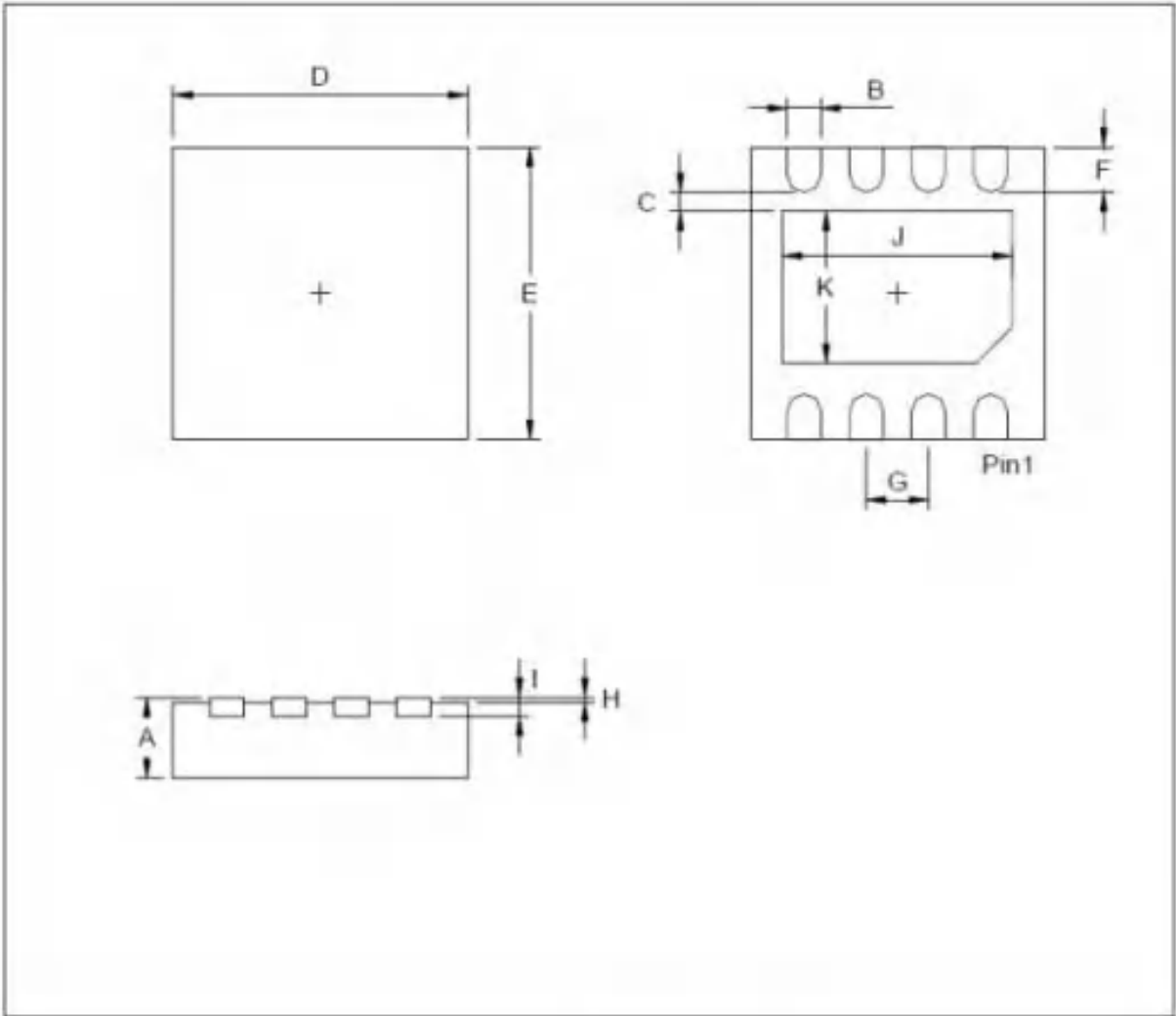


Figure 11: Normalized Maximum Transient Thermal Impedance

Package Mechanical Data:DFN3x3-8L



Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	0.7		0.8	I		0.203	
B	0.25		0.35	J	2.2		2.4
C	0.2			K	1.4		1.6
D	2.924		3.076				
E	2.924		3.076				
F	0.324		0.476				
G		0.65					
H	0		0.05				

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