

N-Channel Enhancement Mode MOSFET

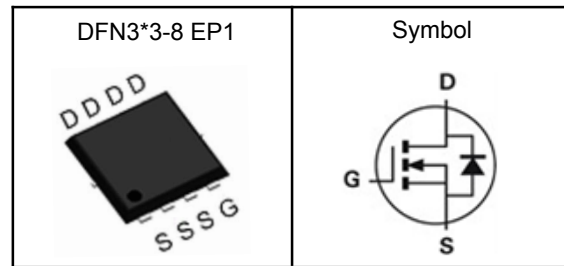
Features

- Fast switching speed
- Reliable and Rugged
- ROHS Compliant
- 100% Avalanche Tested

Applications

- Power Management in Desktop Computer
- DC/DC Converters

Pin Description



V_{DSS}	40	V
$R_{DS(ON)-Typ}$	13	m Ω
I_D	21	A

Absolute Maximum Ratings ($T_C=25^{\circ}C$, Unless Otherwise Noted)

Symbol	Parameter	N-Channel	Unit
V_{DSS}	Drain-Source Voltage	40	V
V_{GSS}	Gate-Source Voltage	± 20	V
T_J	Maximum Junction Temperature	-55 to 150	$^{\circ}C$
T_{STG}	Storage Temperature Range	-55 to 150	$^{\circ}C$
$I_{DM}^{①}$	Pulse Drain Current Tested	32	A
I_D	Continuous Drain Current	21	A
P_D	Maximum Power Dissipation	13.9	W
E_{AS}	Avalanche Energy, Single pulse	25	mJ

Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	95	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance-Junction to Case	9	$^{\circ}C/W$

Note ① : Max. current is limited by bonding wire.

Note ② : UIS tested and pulse width are limited by maximum junction temperature 150 $^{\circ}C$.

Note ③ : Surface Mounted on 1in² FR-4 board with 1oz.



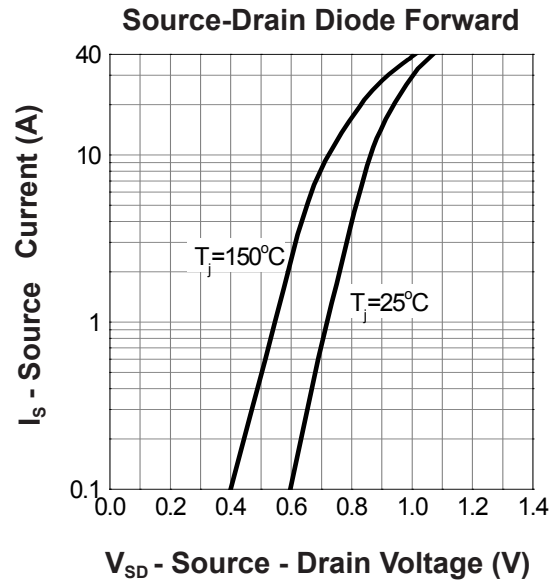
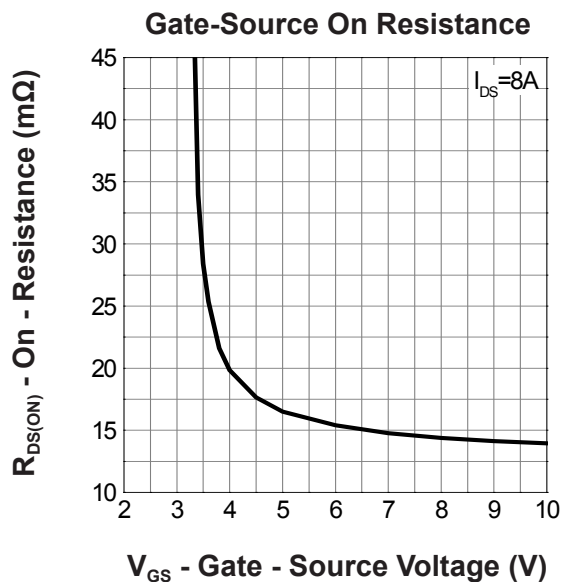
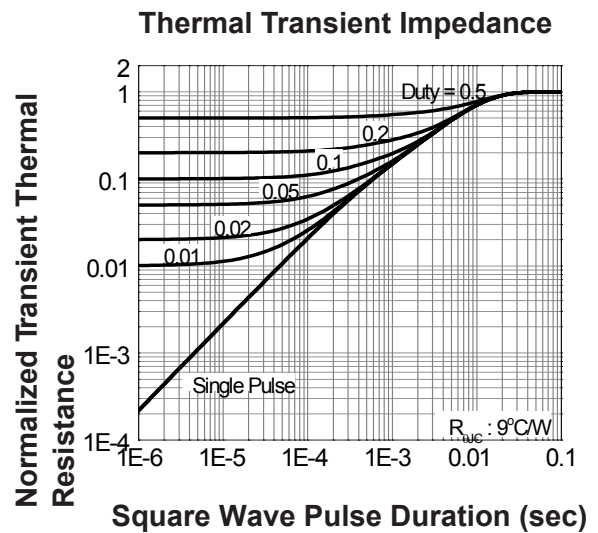
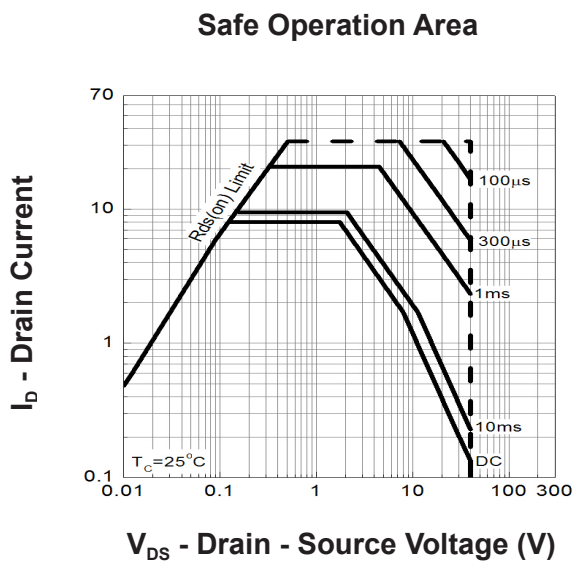
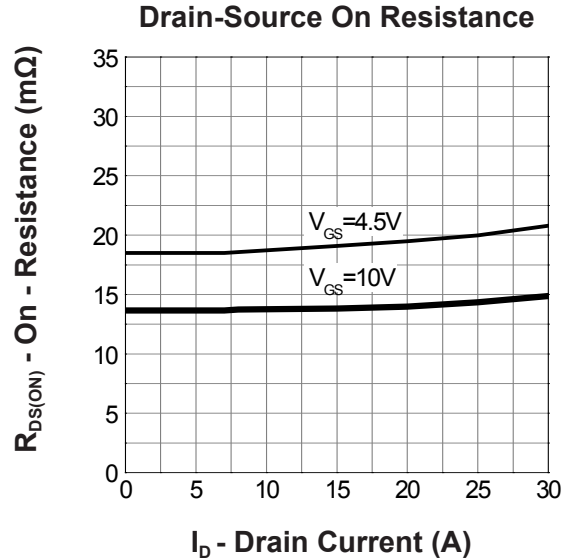
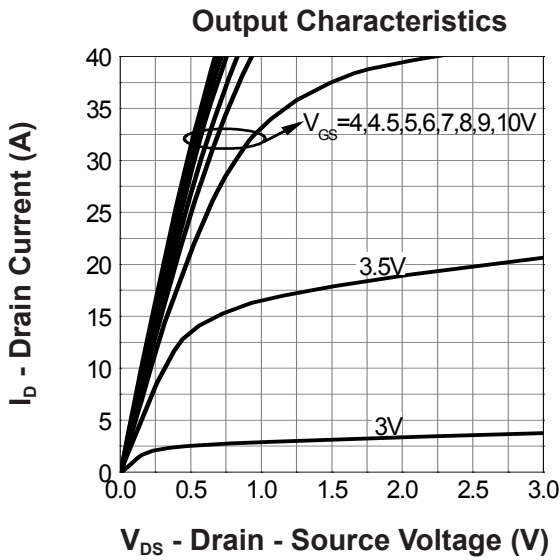
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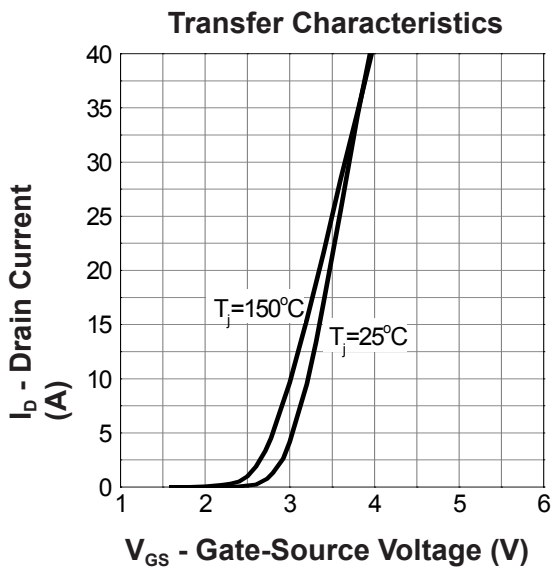
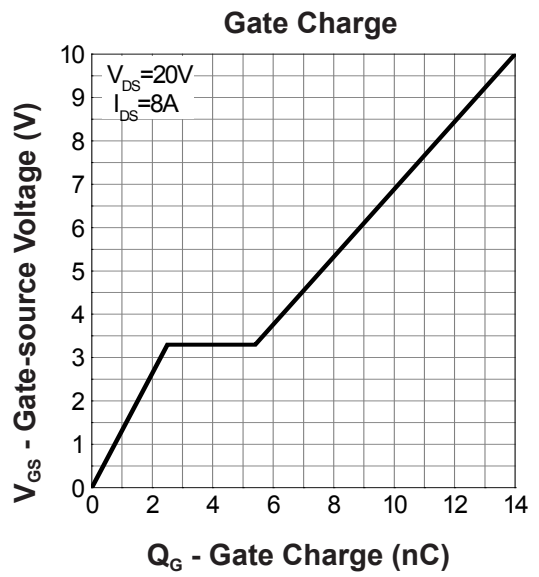
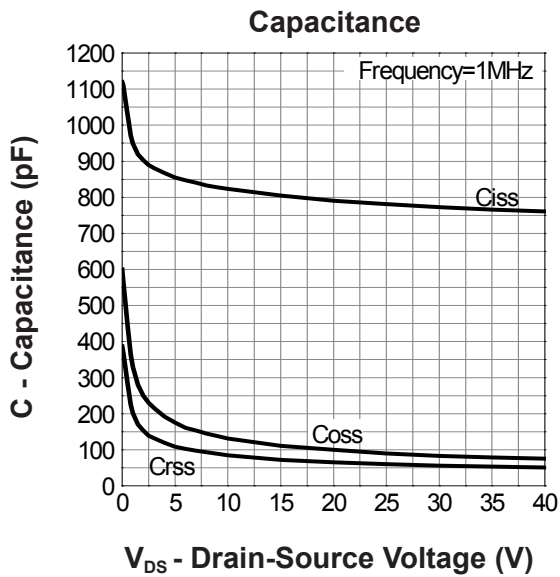
Electrical Characteristics ($T_J=25^{\circ}\text{C}$, Unless Otherwise Noted)

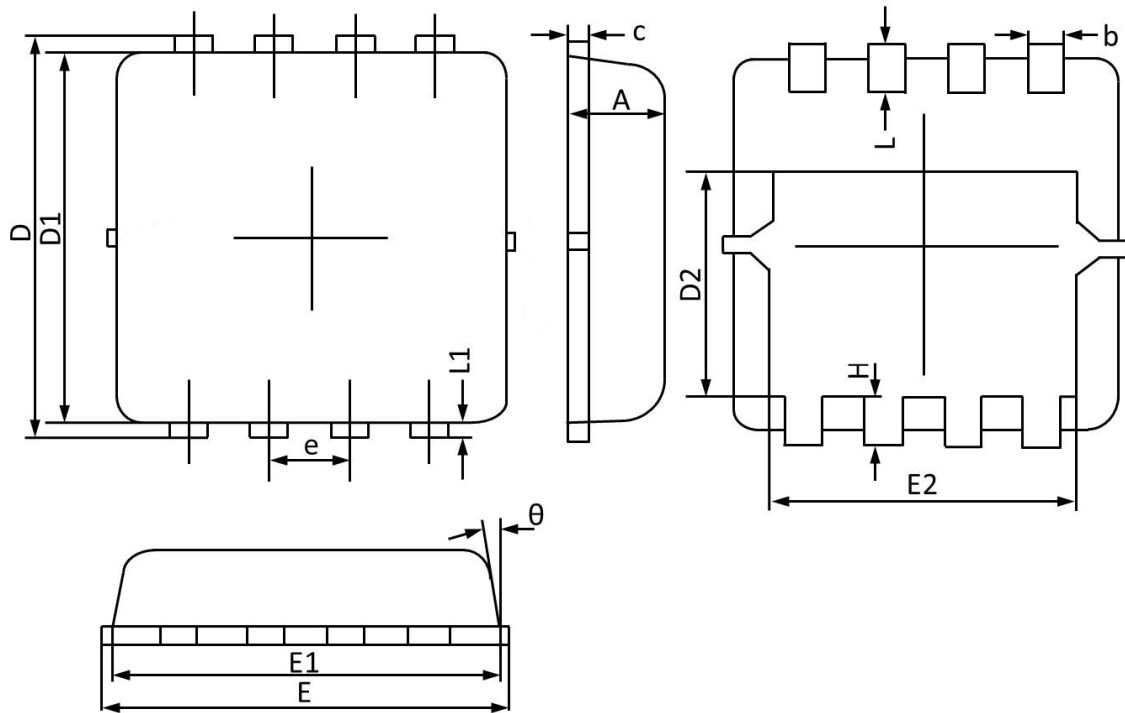
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	40	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=32V, V_{GS}=0V$	---	---	1	μA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	---	2.5	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_D=8A$	---	13	18	m Ω
		$V_{GS}=4.5V, I_D=7A$	---	18.5	24	m Ω
Dynamic Characteristics ^⑤						
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=20V, \text{Freq.}=1\text{MHz}$	---	790	---	pF
C_{oss}	Output Capacitance		---	100	---	
C_{rss}	Reverse Transfer Capacitance		---	65	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DD}=20V, R_L=20\Omega, I_{DS}=1A, V_{GEN}=10V, R_G=6\Omega$	---	10	---	nS
T_r	Turn-on Rise Time		---	7.5	---	
$T_{d(off)}$	Turn-off Delay Time		---	23	---	
T_f	Turn-off Fall Time		---	5.5	---	
Q_g	Total Gate Charge	$V_{DS}=20V, V_{GS}=4.5V, I_{DS}=8A$	---	7	---	nC
Q_{gs}	Gate-Source Charge		---	2.5	---	
Q_{gd}	Gate-Drain Charge		---	2.9	---	
Source-Drain Characteristics						
V_{SD}	Diode Forward Voltage	$I_S=1A, V_{GS}=0V$	---	0.75	1.1	V
t_{rr}	Reverse Recovery Time	$I_{SD}=8A, di/dt=100A/\mu s, T_J=25^{\circ}\text{C}$	---	14.5	---	nS
Q_{rr}	Reverse Recovery Charge		---	9	---	nC

Note ④: Pulse test (pulse width \leq 300us, duty cycle \leq 2%).

Note ⑤: Guaranteed by design, not subject to production testing.

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Typical Characteristics


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DFN3*3-8 EP1 Package Outline Data


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°