

## N-Channel Enhancement Mode MOSFET

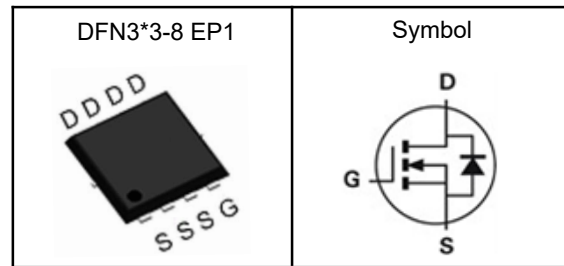
### Features

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

### Applications

- Power Management in Desktop Computer
- DC/DC Converters

### Pin Description



$V_{DSS}$	100	V
$R_{DS(ON)-Typ}$	15	m $\Omega$
$I_D$	31	A

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

Symbol	Parameter	Rating	Unit
$V_{DSS}$	Drain-Source Voltage	100	V
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	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	112	A
$I_D$	Continuous Drain Current	31	A
$P_D$	Maximum Power Dissipation	20.8	W

### Thermal Characteristics

Symbol	Parameter	Rating	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	62.5	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance-Junction to Case	6	$^{\circ}C/W$

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

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

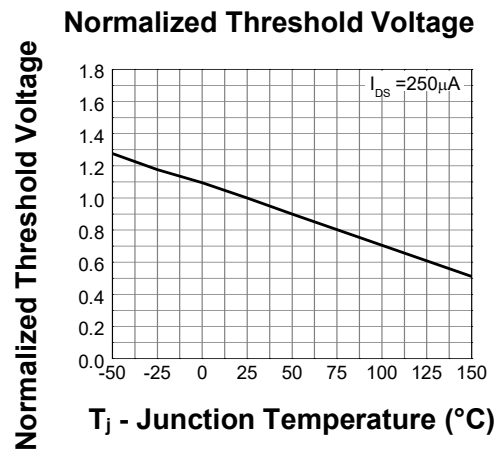
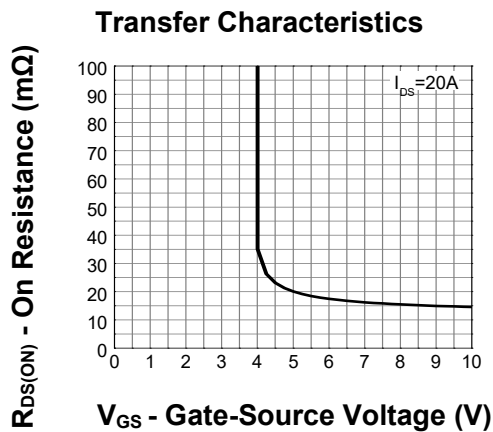
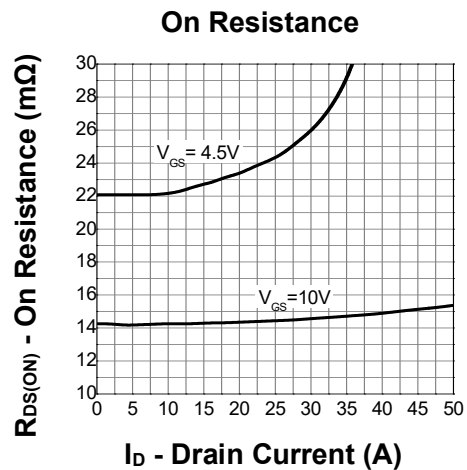
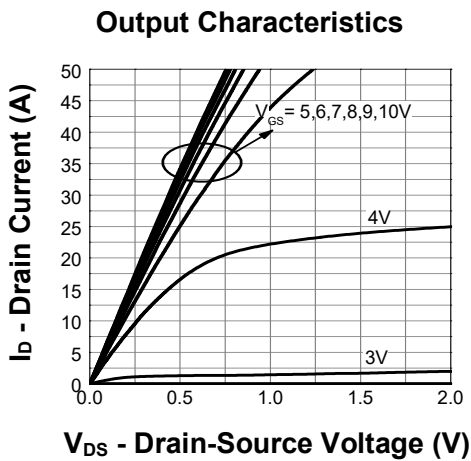
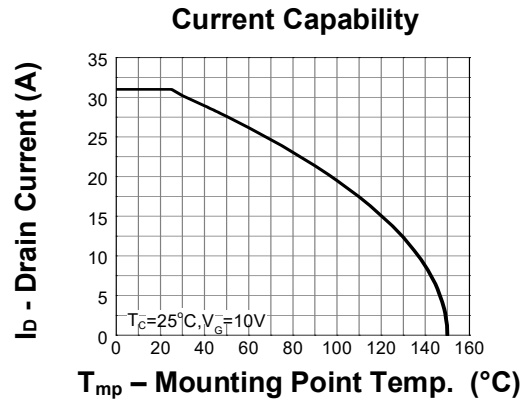
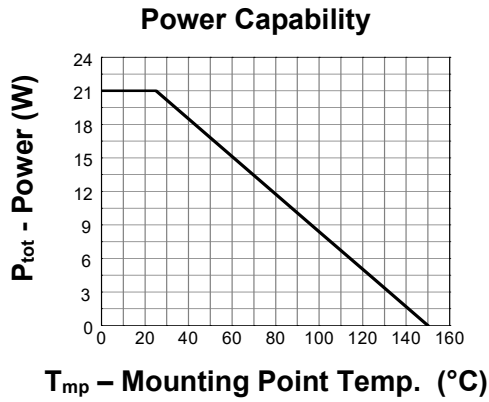
Note ③ : Surface Mounted on 1in<sup>2</sup> FR-4 board with 1oz.

**N-Channel Enhancement Mode MOSFET****Electrical Characteristics** ( $T_J=25^\circ\text{C}$ , Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
<b>Static Electrical Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V$	---	---	1	$\mu A$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	---	1.6	V
$I_{GSS}$	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
$R_{DS(on)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_D=20A$	---	15	18	m $\Omega$
		$V_{GS}=4.5V, I_D=10A$	---	21	26	m $\Omega$
<b>Dynamic Characteristics</b> <sup>⑤</sup>						
$C_{iss}$	Input Capacitance	$V_{GS}=0V, V_{DS}=50V, \text{Freq.}=1\text{MHz}$	---	1230	---	pF
$C_{oss}$	Output Capacitance		---	256	---	
$C_{rss}$	Reverse Transfer Capacitance		---	2.8	---	
$T_{d(on)}$	Turn-on Delay Time	$V_{DS}=50V, R_L=2.5W, I_{DS}=20A, V_{GEN}=10V, R_G=4.5W$	---	8.4	---	nS
$T_r$	Turn-on Rise Time		---	6.3	---	
$T_{d(off)}$	Turn-off Delay Time		---	24	---	
$T_f$	Turn-off Fall Time		---	6	---	
$Q_g$	Total Gate Charge	$V_{DS}=50V, V_{GS}=10V, I_{BS}=20A$	---	28	---	nC
$Q_{gs}$	Gate-Source Charge		---	6.1	---	
$Q_{gd}$	Gate-Drain Charge		---	4.8	---	
<b>Source-Drain Characteristics</b>						
$V_{SD}$	Diode Forward Voltage	$I_S=20A, V_{GS}=0V$	---	---	1.3	V
$t_{rr}$	Reverse Recovery Time	$I_{SD}=20A, di/dt=100A/\mu s, T_J=25^\circ\text{C}$	---	24	---	nS
$Q_{rr}$	Reverse Recovery Charge		---	125	---	nC

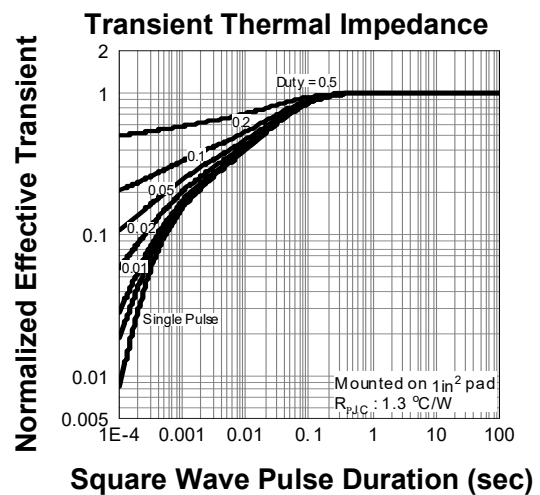
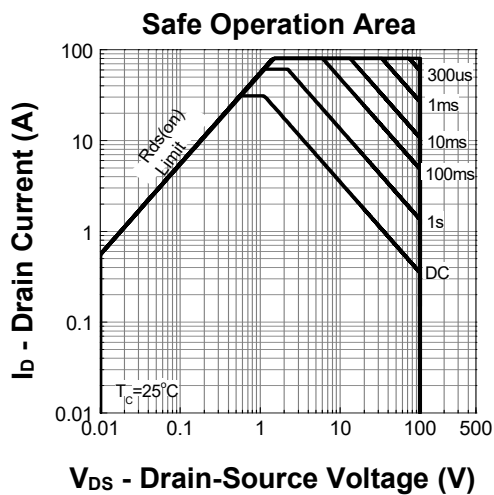
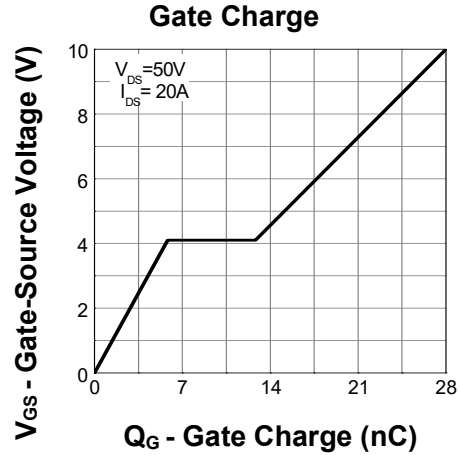
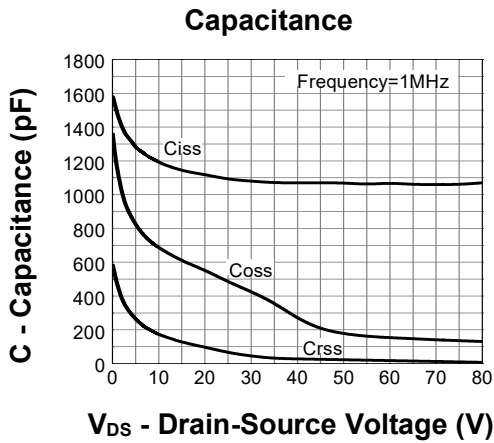
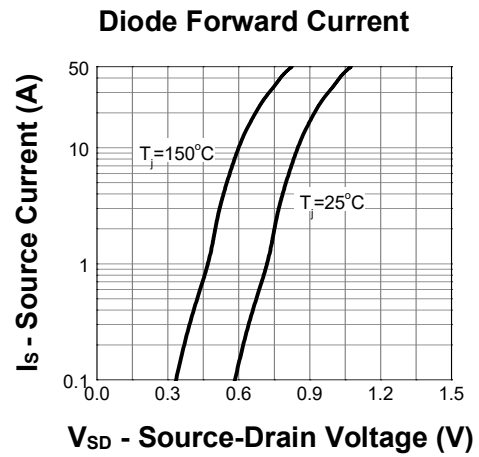
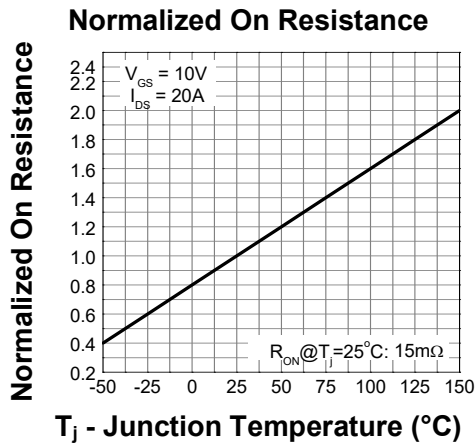
Note ④: Pulse test (pulse width $\leq 300\mu s$ , duty cycle $\leq 2\%$ ).

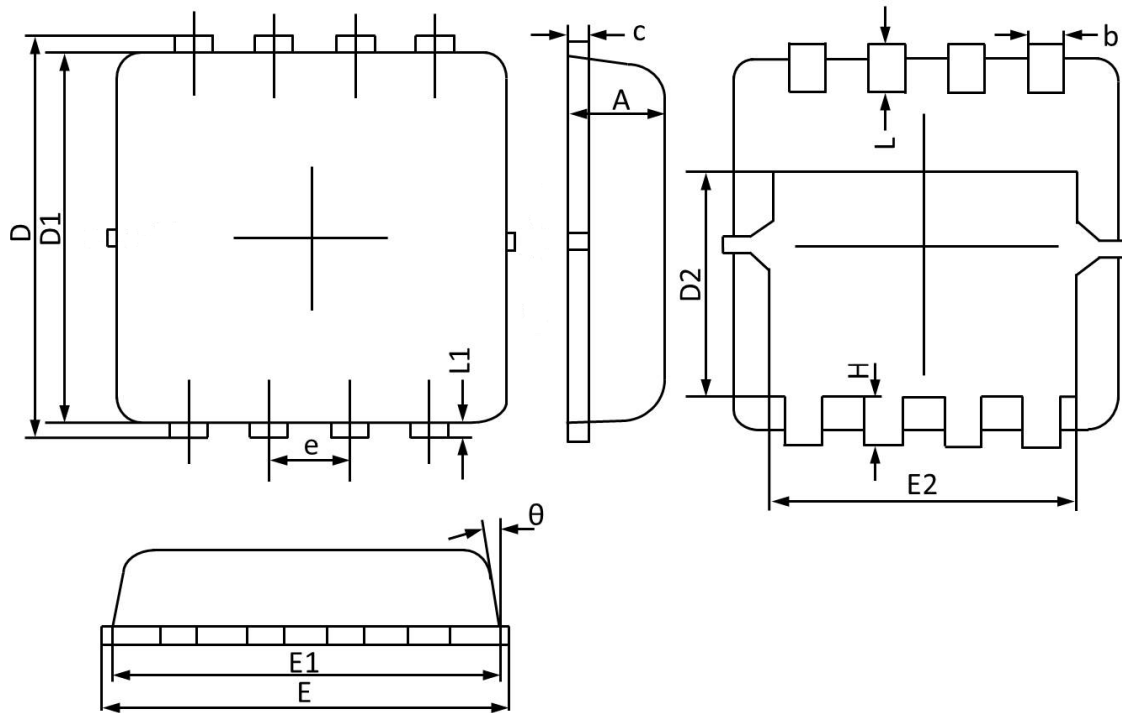
Note ⑤: Guaranteed by design, not subject to production testing.

**N-Channel Enhancement Mode MOSFET**
**Typical Characteristics**




N-Channel Enhancement Mode MOSFET



**N-Channel Enhancement Mode MOSFET**
**DFN3\*3-8 EP1 Package Outline Data**


Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
<b>A</b>	0.70	0.75	0.85	<b>E1</b>	2.90	3.10	3.25
<b>b</b>	0.24	0.30	0.35	<b>E2</b>	2.35	2.50	2.60
<b>c</b>	0.10	0.17	0.25	<b>e</b>	0.65 BSC		
<b>D</b>	3.10	3.30	3.45	<b>H</b>	0.30	0.40	0.50
<b>D1</b>	2.90	3.05	3.20	<b>L</b>	0.30	0.40	0.50
<b>D2</b>	1.45	1.70	1.95	<b>L1</b>	--	0.13	--
<b>E</b>	3.05	3.25	3.40	<b>theta</b>	0°		14°