

## N-Channel 68V MOSFET

### E068N8P5CH1

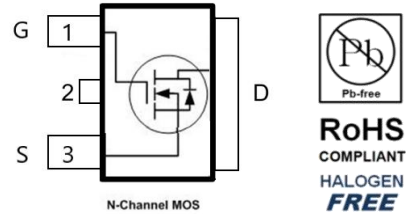
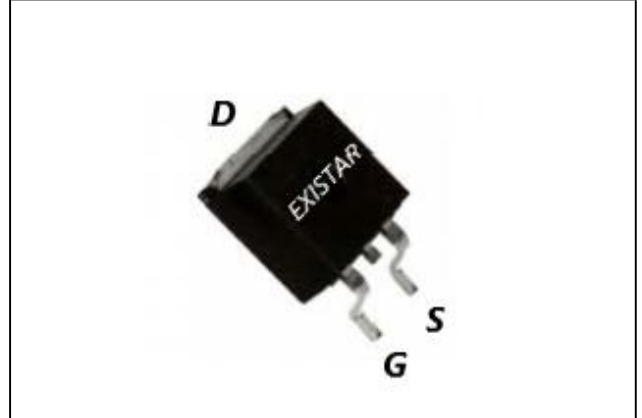
$V_{DS}$ (V)	$R_{DS(on),max}$ (m $\Omega$ )	$I_D$ (A)
68V	8.5 @ $V_{GS} = 10V$	69

### Features

- Low  $R_{DS(on)}$  trench technology
- Low thermal impedance
- Fast switching speed
- 100% avalanche tested

### Applications

- DC/DC conversion
- Power switch
- PD charger
- Moto driver

**TO-252**


### Package And Ordering Information

Ordering code	Package	Marking
E068N8P5CH1	TO-252	E068N8P5CH1

### Ordering Information

Package	Units/ Reel	Reels/ Inner Box	Units/ Inner Box
TO-252	2500	2	5000

**Key Performance Parameters**

Parameter	Value	Unit
VDS, min @ Tj(max)	68	V
ID, pulse	276	A
RDS(ON), max @ VGS=10V	8.5	mΩ
Qg	55.6	nC

**Absolute Maximum Ratings at Tj=25°C Unless Otherwise Noted**

Parameter	Symbol	Limit	Unit
Drain-source voltage	V <sub>DS</sub>	68	V
Gate-source voltage	V <sub>GS</sub>	±20	
Continuous drain current	I <sub>D</sub>	T <sub>C</sub> =25°C	69
		T <sub>C</sub> =100°C	49
Pulsed drain current	I <sub>D,pulse</sub>	276	A
Avalanche energy, single pulse	E <sub>AS</sub>	256	mJ
Power dissipation	P <sub>D</sub>	T <sub>C</sub> =25°C	103
		T <sub>A</sub> =25°C	
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>stg</sub>	-55 To 175	°C

**Thermal Characteristics**

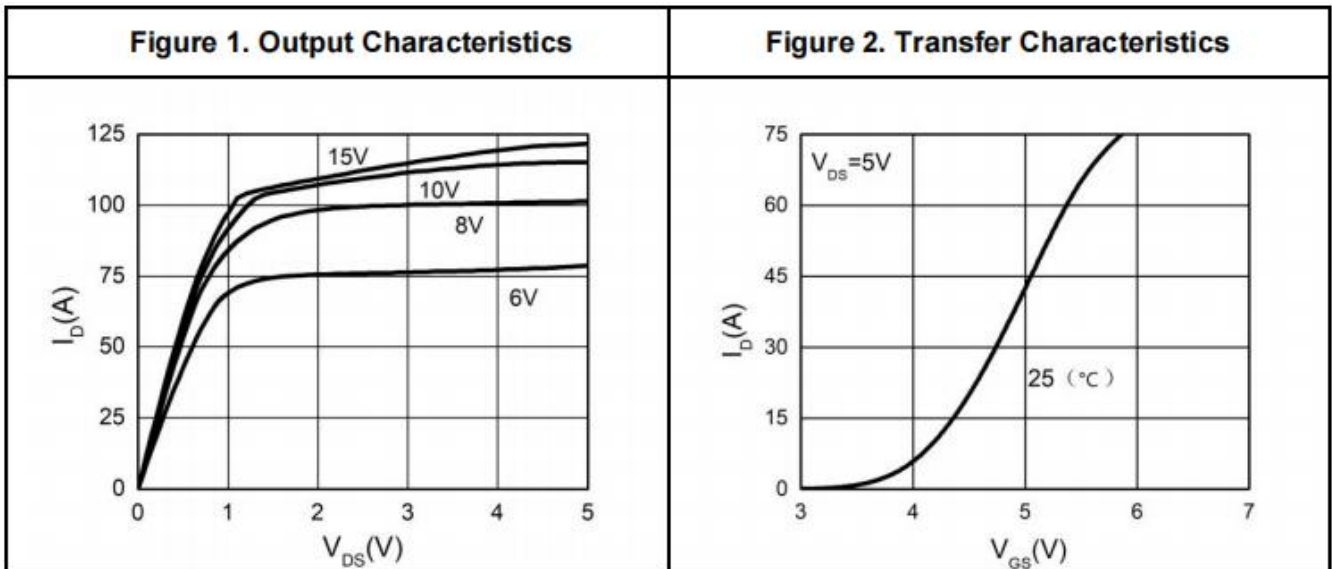
Parameter	Symbol	Max.	Unit
Thermal resistance, junction-to-case	R <sub>θJC</sub>	1.45	°C/W
Thermal resistance, junction-to-ambient	R <sub>θJA</sub>		

**Electrical Characteristics at Tj=25°C unless otherwise specified**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
<b>Static</b>						
Drain to source breakdown voltage	V <sub>(BR)DSS</sub>	68			V	V <sub>GS</sub> = 0, I <sub>D</sub> = 250 μA
Gate-source threshold voltage	V <sub>GS(th)</sub>	2	3	4	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 μA
Gate-body leakage	I <sub>GSS</sub>			±100	nA	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±20 V
Zero gate voltage drain current	I <sub>DSS</sub>			1	μA	V <sub>DS</sub> = 68 V, V <sub>GS</sub> = 0 V
Drain-source on-resistance	R <sub>DS(on)</sub>		6.9	8.5	mΩ	V <sub>GS</sub> = 10 V, I <sub>D</sub> = 40 A
Forward transconductance	g <sub>fs</sub>		33		S	V <sub>DS</sub> = 10 V, I <sub>D</sub> = 20 A
Gate resistance	R <sub>g</sub>		1.7		Ω	f=1MHz

Gate Charge						
Total gate charge	Qg		55.6		nC	V <sub>DS</sub> = 30 V, I <sub>D</sub> = 20 A, V <sub>GS</sub> = 10 V
Gate-source charge	Qgs		11.6			
Gate-drain charge	Qgd		6			
Dynamic						
Turn-on delay time	t <sub>d(on)</sub>		17.9		ns	V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 10 V, R <sub>L</sub> = 1.5 Ω, R <sub>GEN</sub> = 6 Ω
Rise time	t <sub>r</sub>		10.8			
Turn-off delay time	t <sub>d(off)</sub>		42.4			
Fall time	t <sub>f</sub>		10.4			
Input capacitance	C <sub>iss</sub>		2710		pF	V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 0 V, f = 1.0MHz
Output capacitance	C <sub>oss</sub>		203			
Reverse transfer capacitance	C <sub>rss</sub>		176			
Body Diode						
Diode forward voltage	V <sub>SD</sub>			1.2	V	V <sub>GS</sub> = 0 V, I <sub>S</sub> = 20 A
Reverse recovery time	t <sub>rr</sub>		36.1		ns	I <sub>F</sub> = 20 A, di/dt = 100 A/μs
Reverse recovery charge	Q <sub>rr</sub>		44.6		nC	

### Electrical Characteristics Diagrams



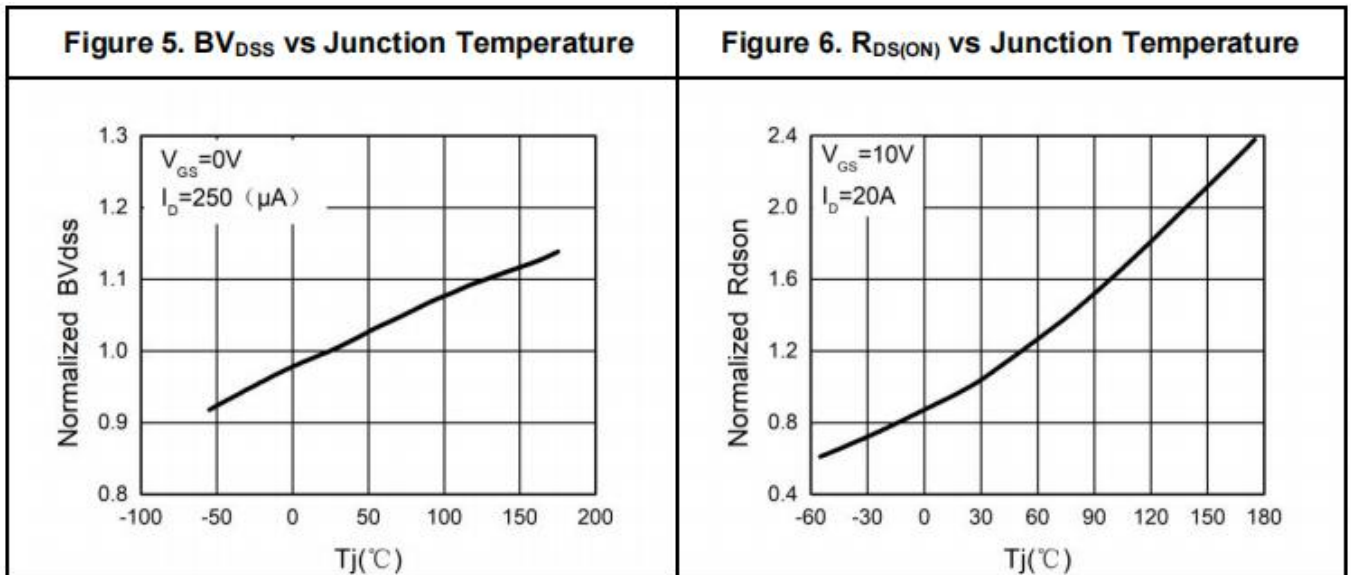
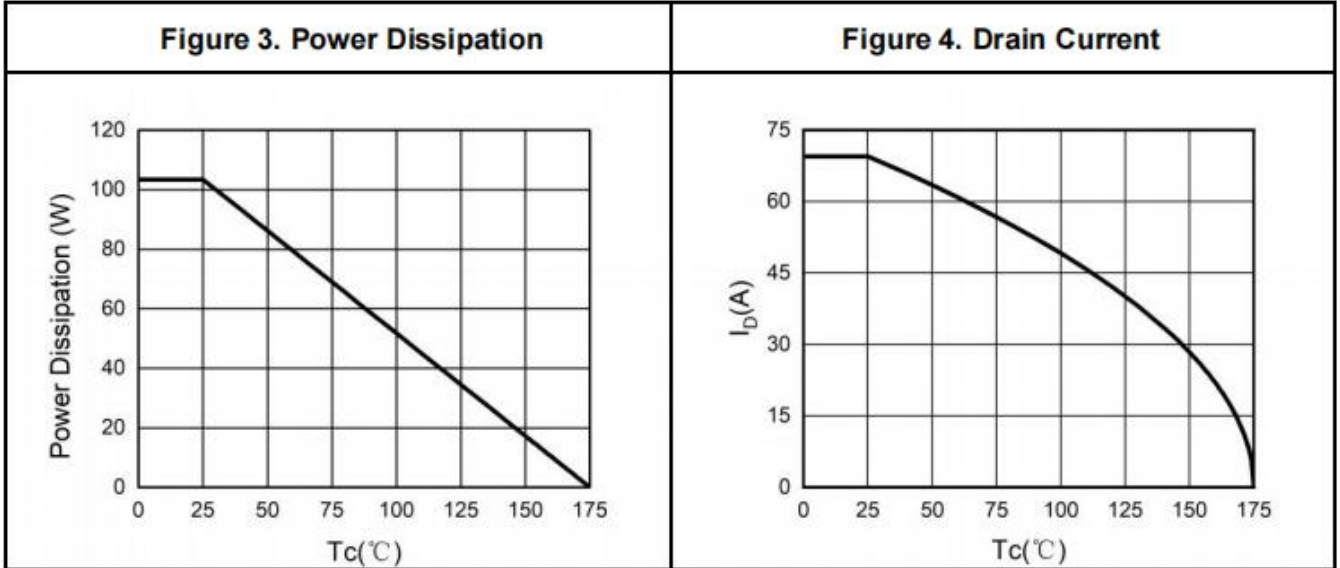


Figure 7. Gate Charge Waveforms

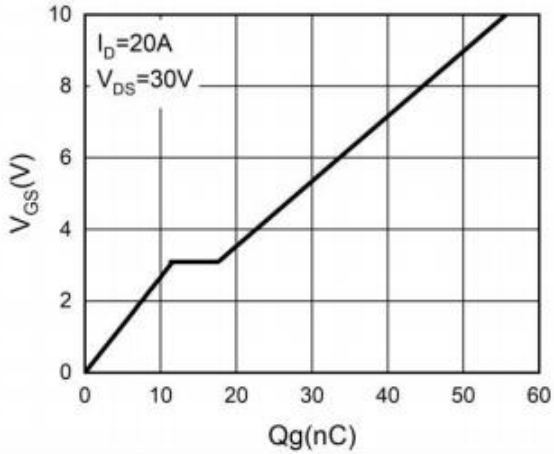


Figure 8. Capacitance

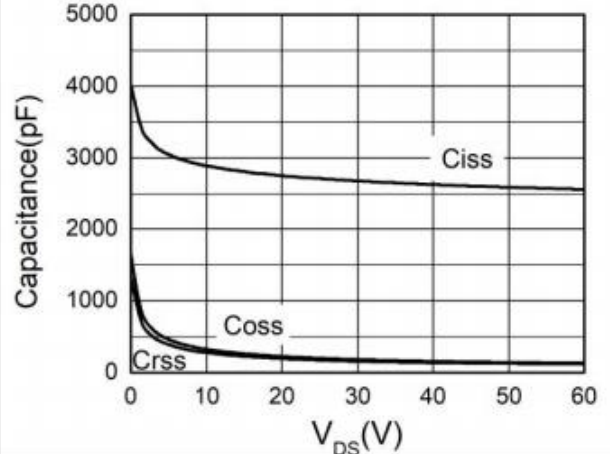


Figure 9. Body-Diode Characteristics

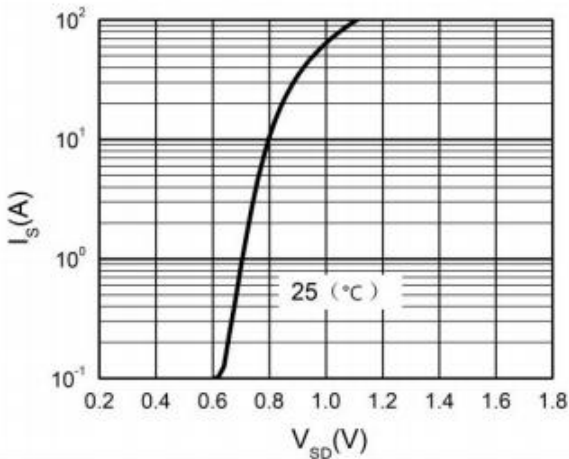
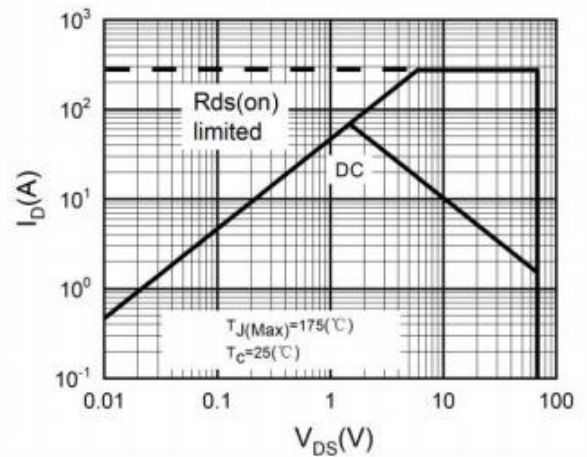
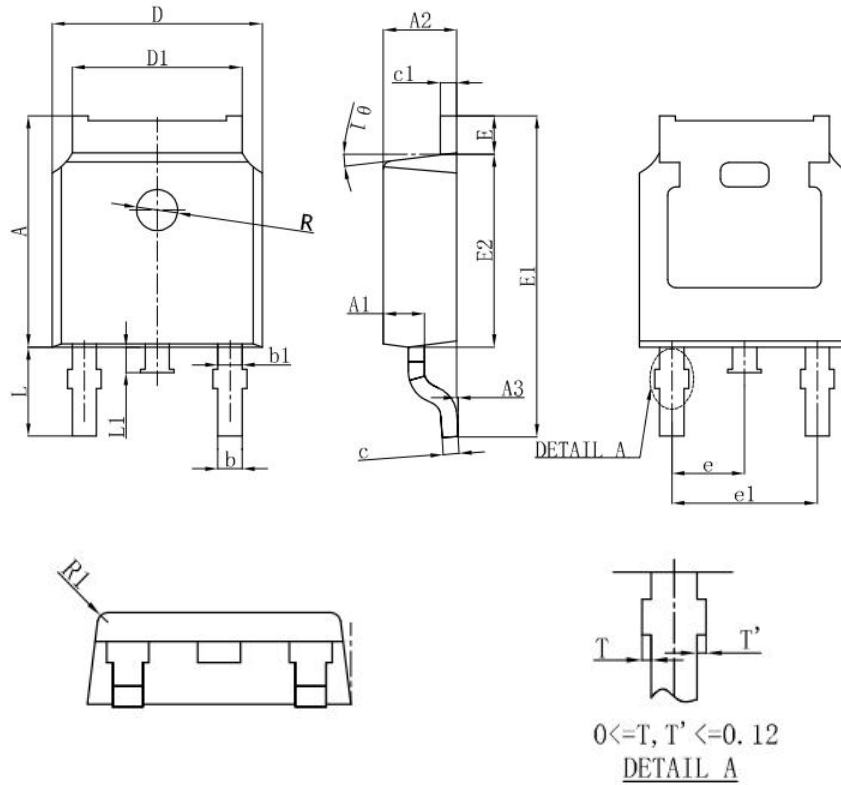


Figure 10. Maximum Safe Operating Area



**Package Outline Dimensions**


SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	7.050	7.100	7.150
A1	0.960	1.010	1.060
A2	2.250	2.300	2.350
A3	0.000	0.050	0.100
b	0.760REF.		
b1	1.000REF.		
c	0.508REF.		
c1	0.508REF.		
D	6.550	6.600	6.650
D1	5.220	5.320	5.420
E	0.950	1.000	1.050
E1	9.700	9.900	10.100
E2	6.050	6.100	6.150
e	2.286BSC		
e1	4.572REF.		
L	2.650	2.800	2.950
L1	0.700	0.800	0.900
0 1	7° REF.		
R	0.250REF.		

0 ≤ T, T' ≤ 0.12  
DETAIL A

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