

SuperMOS –PDFN3*3-8L 30V BV_{DSS}, 11.5mΩ R_{DS(on)}, N-channel MOSFET

1. Description

The ESN4832 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent R_{DS(ON)} with low gate charge. Device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product ESN4832 is Pb-free.

2. Features

- 30V, R_{DS(ON)}=11.5mΩ(TYP.) @V_{GS}=10V
R_{DS(ON)}=14.5mΩ(TYP.) @V_{GS}=4.5V
 - Use trench MOSFET technology
 - High density cell design for low R_{DS(on)}
- Material: Halogen free
 - Reliable and rugged
 - Avalanche Rated
 - Low leakage current

3. Applications

- PWM applications
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

100% UIS TESTED

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
ESN4832	PDFN3*3-8L	ESN4832/lot	Halogen free	Tape & Reel	5,000 PCS	UL 94V-0	13 inches

Table-1 Ordering information

5. Pin Configuration and Functions

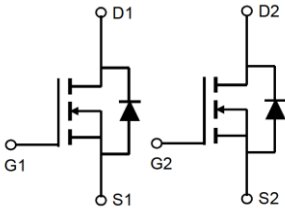
Pin	Function	Outline	Circuit Diagram
1	Source1	Note b 	
2	Gate1		
7/8	Drain1		
3	Source2		
4	Gate2		
5/6	Drain2		

Table-2 Pin configuration

6. Specification

Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		BV_{DSS}	30	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C=25^{\circ}\text{C}$	I_D	27	A
	$T_C=75^{\circ}\text{C}$		20	
Maximum Power Dissipation	$T_C=25^{\circ}\text{C}$	P_D	20.8	W
	$T_C=75^{\circ}\text{C}$		12.5	
Pulsed Drain Current		I_{DM}	100	A
Avalanche Current, Single Pulsed ^a		I_{AS}	15	A
Avalanche Energy, Single Pulsed ^a		E_{AS}	33	mJ
Operating Junction Temperature		T_J	150	$^{\circ}\text{C}$
Lead Temperature		T_L	260	$^{\circ}\text{C}$
Storage Temperature Range		T_{stg}	-55 to 150	$^{\circ}\text{C}$

Thermal resistance ratings

Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Case Thermal Resistance	$t \leq 10 \text{ s}$	$R_{\theta JC}$		6	$^{\circ}\text{C/W}$

Notes:

a: $T_J=25^{\circ}\text{C}$, $V_{DD}=30\text{V}$, $V_G=10\text{V}$, $L=0.3\text{mH}$, $R_g=25\Omega$.

b: This diagram is only an electrical schematic, and the actual pin size is based on POD.

Electrical Characteristics

At TA = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1.0	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250uA	1.0	1.5	2.4	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} =10V, I _D =8A		11.5	19	mΩ
		V _{GS} =4.5V, I _D =6A		14.5	26	
Forward Trans conductance	g _{FS}	V _{DS} =5.0V, I _D =8A			80	S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} =0V, f=1MHz, V _{DS} =15V		750		pF
Output Capacitance	C _{OSS}			125		
Reverse Transfer Capacitance	C _{RSS}			70		
Total Gate Charge	Q _{G(TOT)}	V _{GS} =4.5V, V _{DS} =15V, I _D =8A		15		nC
Gate-to-Source Charge	Q _{GS}			2.5		
Gate-to-Drain Charge	Q _{GD}			3		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{d(ON)}	V _{GS} =10V, V _{DS} =15V, R _L =1.5Ω, R _{GEN} =3Ω		4.5		ns
Rise Time	t _r			10		
Turn-Off Delay Time	t _{d(OFF)}			18		
Fall Time	t _f			6		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} =0V, I _S =1.0A	0.45		1.5	V

7. Typical Characteristic

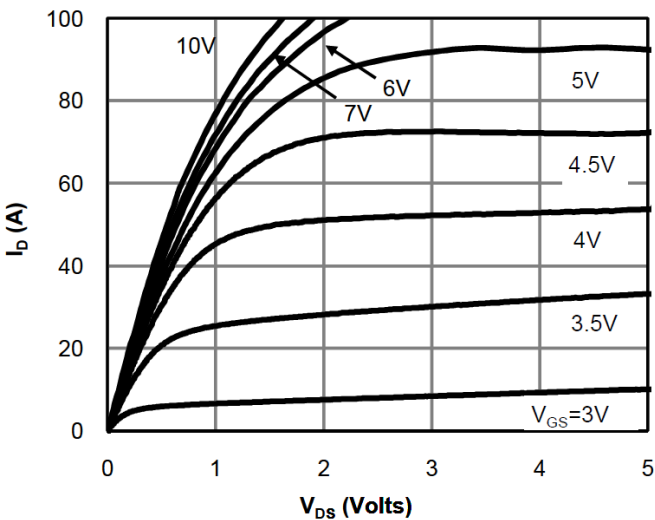


Fig 1: On-Region Characteristics

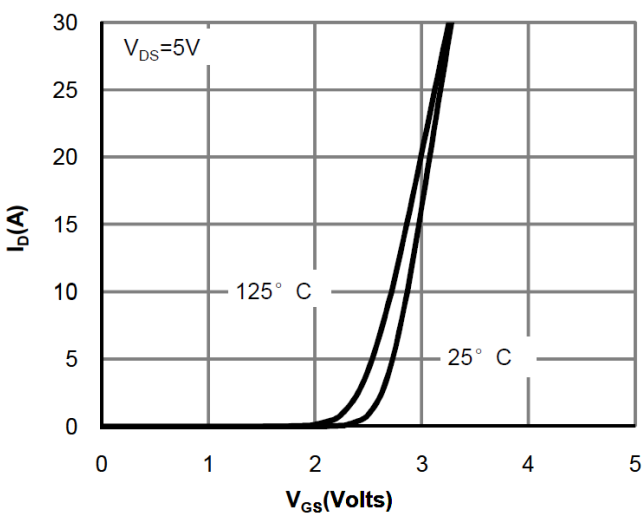


Figure 2: Transfer Characteristics

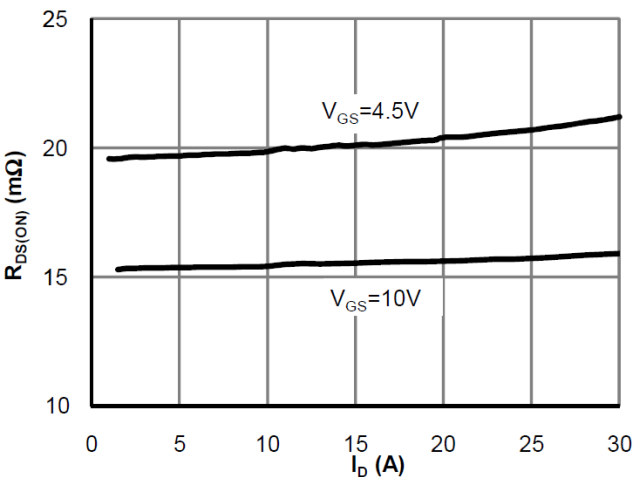


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

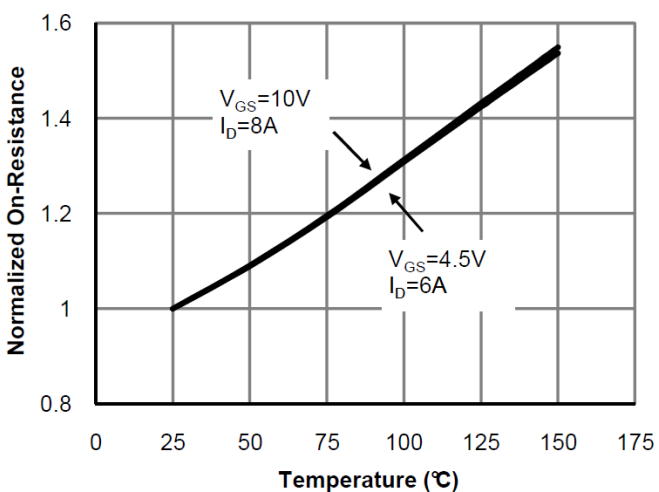


Figure 4: On-Resistance vs. Junction Temperature

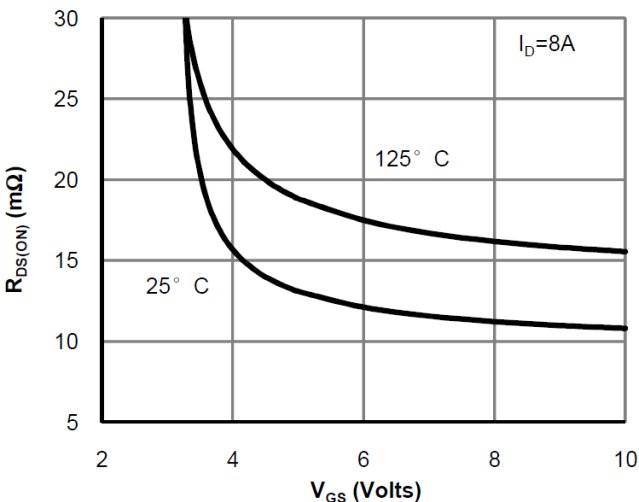


Figure 5: On-Resistance vs. Gate-Source Voltage

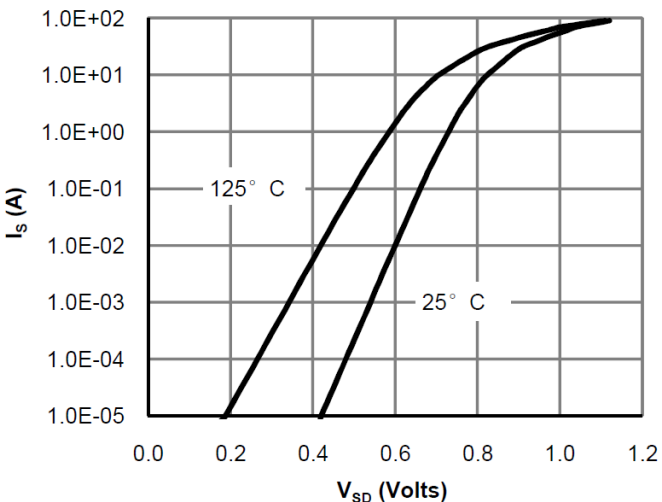
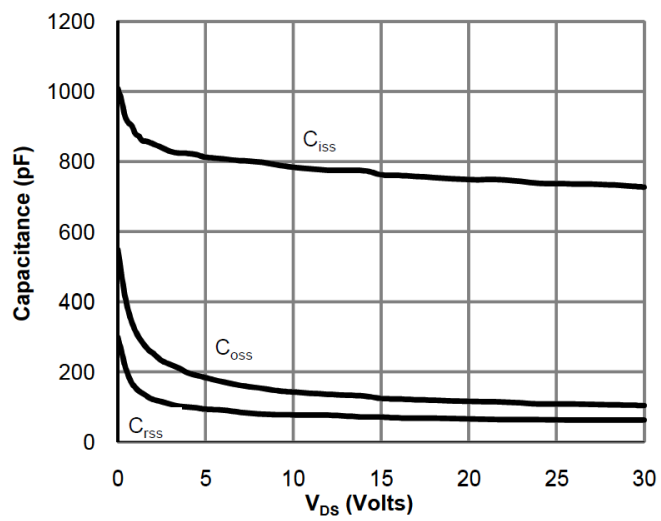
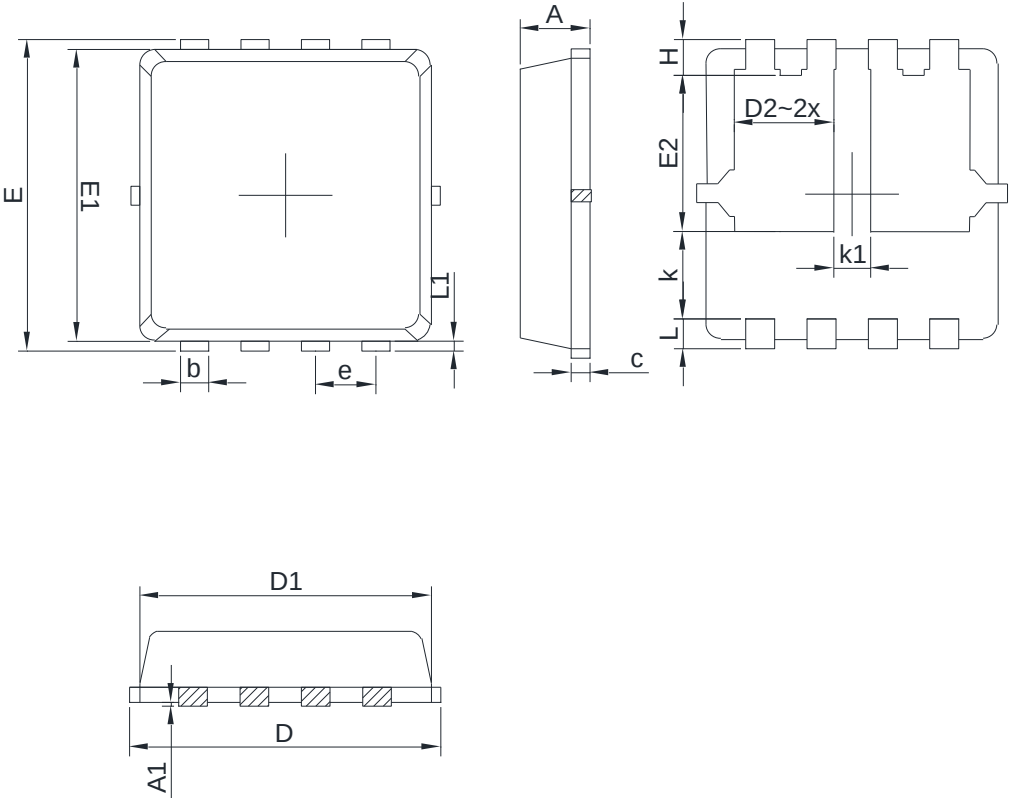


Figure 6: Body-Diode Characteristics

**Figure 7: Capacitance Characteristics**

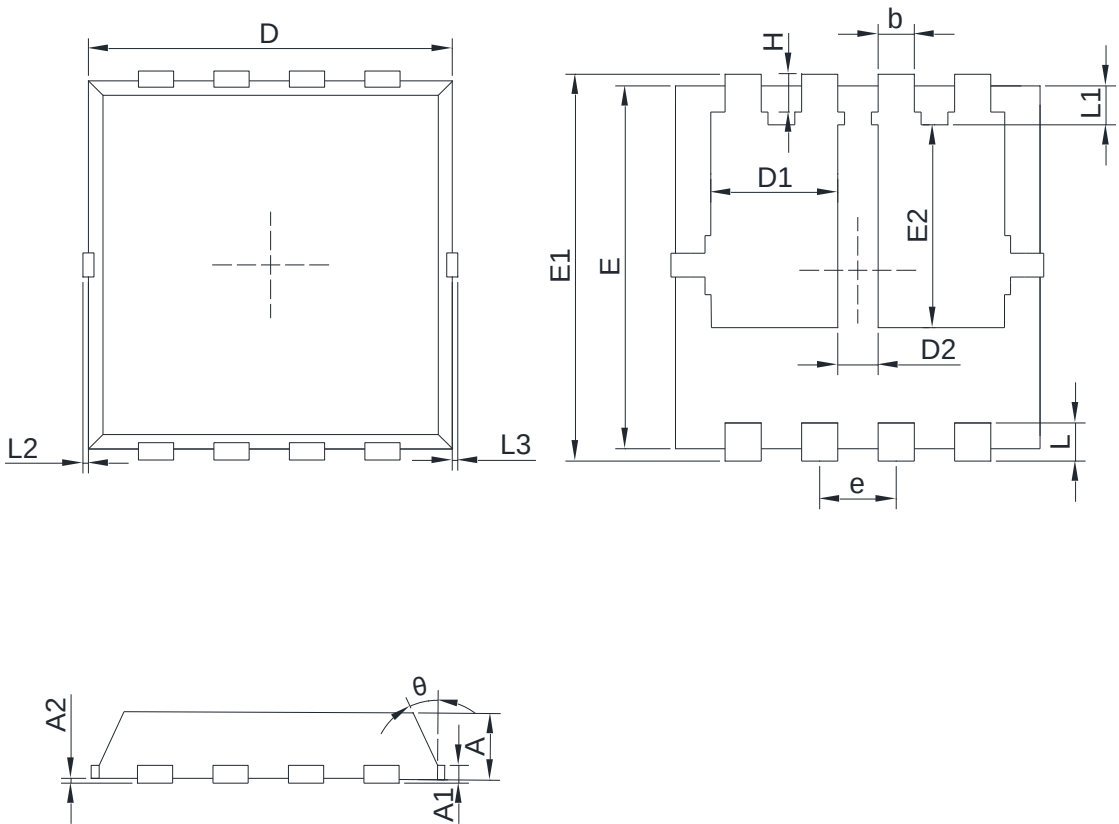
8. Dimension (PDFN3*3-8L)

POD A(Q)



Symbol	Dimensions in Millimeters			Symbol	Dimensions in Millimeters		
	Min.	NOM.	Max.		Min.	NOM.	Max.
A	0.65	0.75	0.85	H	0.385	0.485	0.585
A1			0.05	k	0.30		
b	0.20	0.30	0.40	L	0.30	0.40	0.50
c	0.10	0.15	0.25	e	0.65BCS		
D	3.05	3.20	3.35	L1	0.025	0.125	0.225
D1	3.05	3.15	3.25	D2	0.89	1.04	1.19
E	3.25	3.35	3.45	E2	1.55	1.70	1.85
E1	3.00	3.10	3.20	k1	0.23	0.38	0.53

POD B(X)



COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER							
SYMBOL	MIN	TYP	MAX	SYMBOL	MIN	TYP	MAX
A	0.700	0.800	0.900	L	0.300	0.400	0.500
A1	0.152 REF			L1	0.180	0.330	0.480
A2	0~0.05			L2	0~0.100		
D	3.000	3.100	3.200	L3	0~0.100		
D1	0.935	1.035	1.135	H	0.315	0.415	0.515
E	2.900	3.000	3.100	b	0.200	0.300	0.400
E1	3.150	3.300	3.450	e	0.550	0.650	0.750
E2	1.535	1.735	1.935	θ	8°	10°	12°
D2	0.280	0.380	0.480				

Technical drawing of a mechanical part, showing a cross-section with dimensions. The part is a stepped profile with a total width of 3.50 and a total height of 3.70. The top surface is flat at a height of 2.45. The profile features a central vertical slot and several horizontal steps. Key dimensions include:

- Overall width: 3.50
- Overall height: 3.70
- Top surface height: 2.45
- Central slot width: 0.42
- Slot offset from center: 0.23
- Step height on the right: 0.55
- Step height on the left: 0.40
- Bottom step height: 0.60
- Bottom slot width: 0.65
- Bottom slot offset from center: 0.42

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