

SuperMOS – PDFN5*6-8L-30V 11.5mΩ R_{DS(ON)}, P-channel MOSFET

1. Description

The ESN6435 uses advanced trench technology MOSFETs to provide excellent R_{DS(ON)} and low gate charge. Device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product ESN6435 Pb-free

2. Features

- -30V R_{DS(ON)}=11.5mΩ(Typ.) @V_{GS}=-10V
R_{DS(ON)}=19.5mΩ(Typ.) @V_{GS}=-4.5V
 - Fast Switching
 - High density cell design for low R_{DS(on)}
- Material: Halogen free
 - Reliable and rugged
 - Avalanche Rated
 - Low leakage current

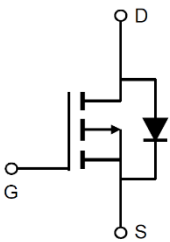
3. Applications

- 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
ESN6435	PDFN5*6-8L	.N6435/LOT	Halogen free	Tape & Reel	5,000 PCS	UL 94V-0	13 inches

5. Pin Configuration and Functions

Pin	Function	Outline	Circuit Diagram
4	Gate	Note b 	
1/2/3	Source		
5/6/7/8	Drain		

6. Specification

Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

Parameter		Symbol	Limited	Unit
Drain-Source Voltage		BV_{DSS}	-30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	$T_C=25^{\circ}C$	I_D	-24	A
	$T_C=100^{\circ}C$		-14.4	
Maximum Power Dissipation		P_D	14.7	W
Pulsed Drain Current		I_{DM}	-96	A
Single Pulse Avalanche Current ^a		I_{AS}	-12.5	A
Single Pulse Avalanche Energy ^a		E_{AS}	39	mJ
Operating Junction Temperature		T_J	150	°C
Storage Temperature Range		T_{stg}	-55 to +150	°C

Thermal resistance ratings

Parameter	Symbol	Typical	Maximum	Unit
Junction-to-Case Thermal Resistance	$R_{\theta JC}$		8.5	°C/W

Notes:

a: The EAS data shows Max. rating The test condition is $V_{DD} = -15V$, $V_G = -10V$, $L = 0.5mH$, $R_G = 25\Omega$, $T_J = 25^{\circ}C$

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

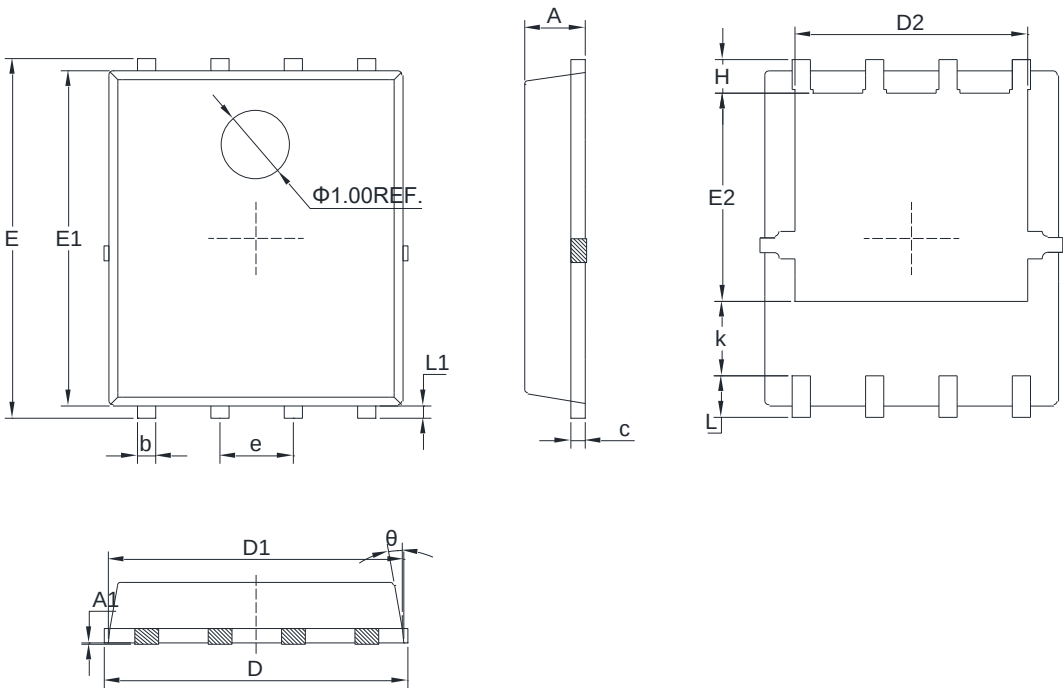
Electrical Characteristics

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 _{GS} =0V, V _{DS} =-30V			-1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =-250uA	-1	-1.6	-2.5	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-10A		11.5	15	mΩ
		V _{GS} =-4.5V, I _D =-8A		19.5	25.5	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =-15V f=1MHz		900		pF
Output Capacitance	C _{OSS}			172		
Reverse Transfer Capacitance	C _{RSS}			146		
Total Gate Charge	Q _{G(TOT)}	V _{GS} =-10V, V _{DS} =-15V I _D =-5A		22		nC
Gate-to-Source Charge	Q _{GS}			3		
Gate-to-Drain Charge	Q _{GD}			6		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{d(ON)}	V _{GS} =-10V, V _{DS} =-15V I _D =-5A, R _G =2.5Ω		10		ns
Rise Time	t _r			14		
Turn-Off Delay Time	t _{d(OFF)}			50		
Fall Time	t _f			20		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} =0V, I _{SD} =-10A			-1.2	V

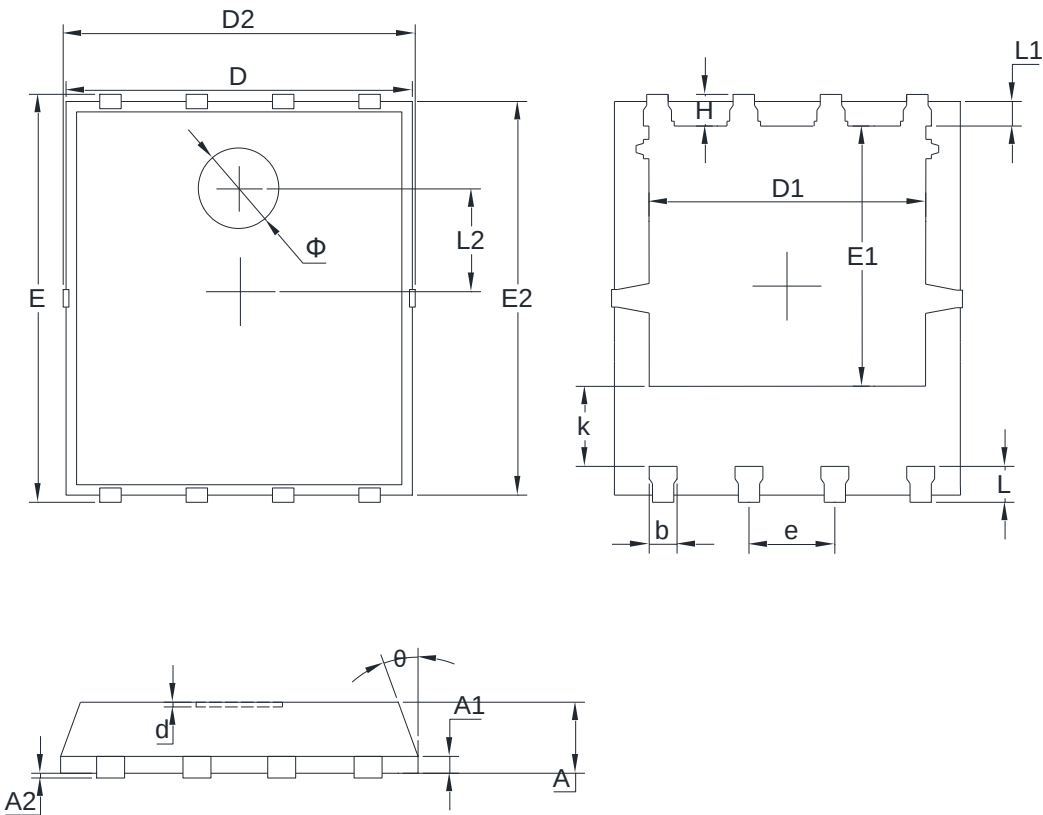
7. Dimension (PDFN5*6-8L)

POD A



Symbol	Dimensions in Millimeters			Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX		MIN	NOM	MAX
A	0.90	1.00	1.10	H	0.46	0.56	0.66
A1			0.05	k	1.10		
b	0.30	0.40	0.50	L	0.51	0.61	0.71
c	0.20	0.25	0.30	L1	0.05	0.15	0.25
D	4.80	5.10	5.40	θ	8°	10°	12°
D2	3.75	3.90	4.05	D1	4.80	4.90	5.00
E	5.95	6.05	6.15				
E1	5.65	5.75	5.85				
e	1.27BCS						
E2	3.34	3.49	3.64				

POD B



Symbol	Dimensions in Millimeters			Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX		MIN	NOM	MAX
A	0.900	1.000	1.100	H	0.549	0.625	0.701
A1	0.254 REF			k	1.190	1.290	1.390
A2	0.000		0.050	L	0.534	0.610	0.686
D	4.824	4.900	4.976	L1	0.424	0.500	0.576
D1	3.910	4.010	4.110	θ	8°	10°	12°
D2	4.924	5.000	5.076	L2	1.800 REF		
E	5.924	6.000	6.076	Φ	1.100	1.200	1.300
E1	3.375	3.475	3.575	d			0.100
e	1.270 TYP			b	0.350	0.400	0.450
E2	5.674	5.750	5.826				

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