

1. Description

The ESN7534 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 ESN7534 is Pb-free.

2. Features

- 30V, $R_{DS(ON)}=4.0m\Omega(TYP.) @V_{GS}=10V$
 $R_{DS(ON)}=7.4m\Omega(TYP.) @V_{GS}=4.5V$
- High density cell design for low $R_{DS(on)}$
- Material: Halogen free
- Reliable and rugged
- Avalanche Rated
- Low leakage current

3. Applications

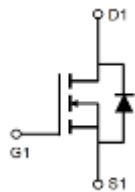
- PWM applications
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

100% UIS TESTED

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel Size
ESN7534	PDFN3*3-8L	.NH03R05/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	Limit	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	62.7	A
	$T_C=100^{\circ}C$		39.6	
Maximum Power Dissipation		P_D	34.7	W
Pulsed Drain Current		I_{DM}	250.7	A
Avalanche Energy, Single Pulsed ^a		E_{AS}	92	mJ
Operating Junction Temperature		T_J	150	°C
Lead Temperature		T_L	260	°C
Storage Temperature Range		T_{stg}	-55 to 150	°C

Thermal resistance ratings

Single Operation				
Parameter	Symbol	Typical	Maximum	Unit
Junction-to-Case Thermal Resistance	$R_{\theta JC}$		3.6	°C/W

Note:

a: EAS condition: $T_J=25^{\circ}C$, $V_{DD}=25V$, $V_G=10V$, $L=0.5mH$, $R_g=25\Omega$.

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	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		2.5	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		4.0	5.2	mΩ
		V _{GS} =4.5V, I _D =15A		7.4	8.7	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} =0V, f=1MHz, V _{DS} =15V		1916		pF
Output Capacitance	C _{OSS}			217		
Reverse Transfer Capacitance	C _{RSS}			183		
Total Gate Charge	Q _G	V _{GS} =0 to 10V, V _{DS} =15V I _D =30 A		37		nC
Gate-to-Source Charge	Q _{GS}			7.4		
Gate-to-Drain Charge	Q _{GD}			8.6		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{d(ON)}	V _{GS} =10V, V _{DD} =15V I _D =30A, R _G =3Ω		8.4		ns
Rise Time	t _r			20		
Turn-Off Delay Time	t _{d(OFF)}			32		
Fall Time	t _f			9		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} =0V, I _S =30A			1.2	V

7. Typical Characteristics

Figure 1: Output Characteristics

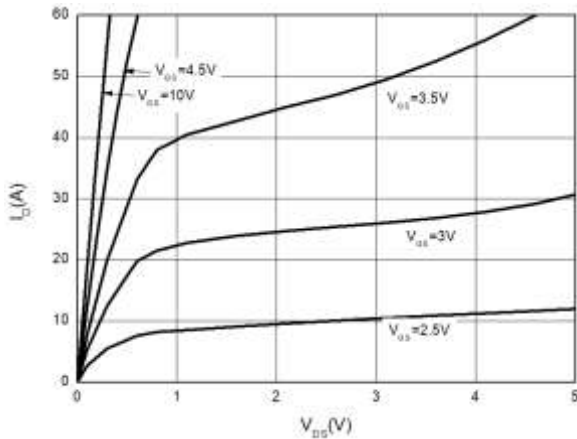


Figure 2: Typical Transfer Characteristics

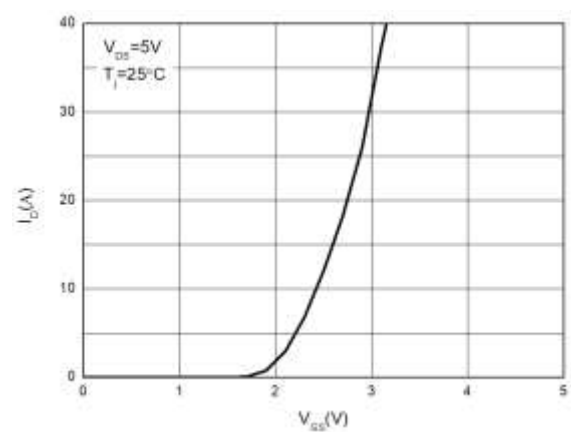


Figure 3: On-resistance vs. Drain Current

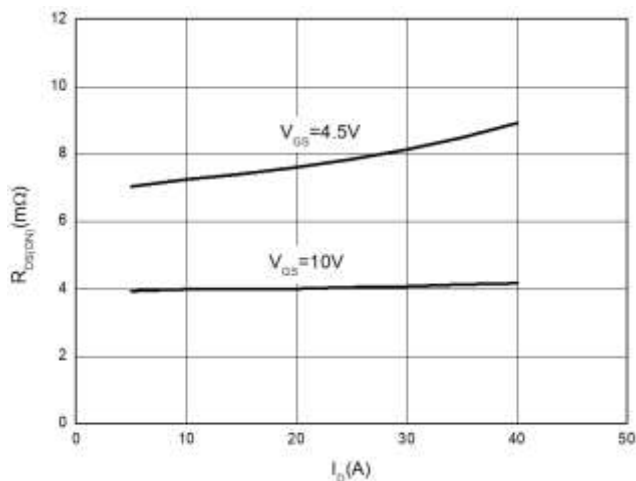


Figure 4: Body Diode Characteristics

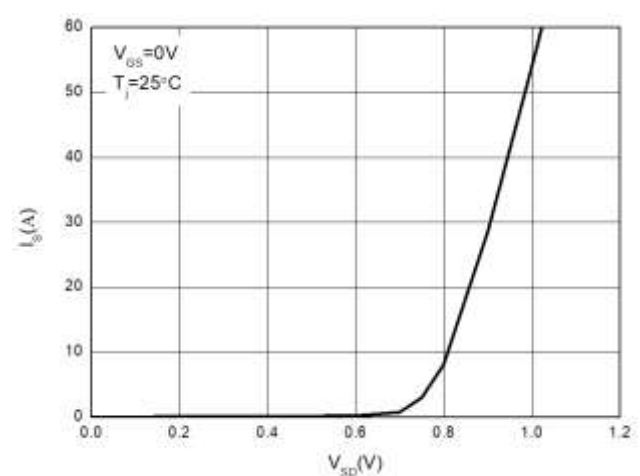


Figure 5: Capacitance Characteristics

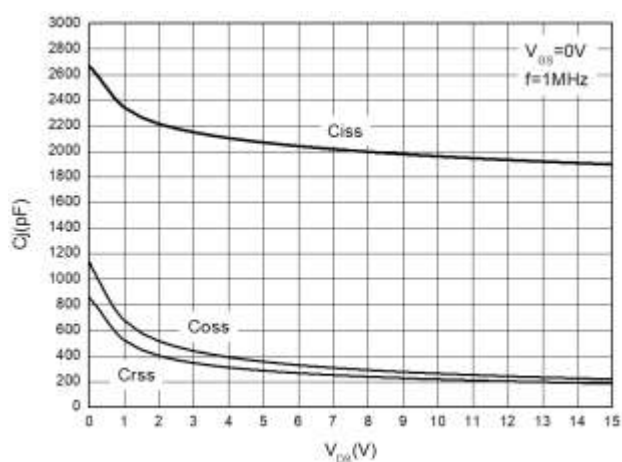


Figure 6: Normalized on Resistance vs. Junction Temperature

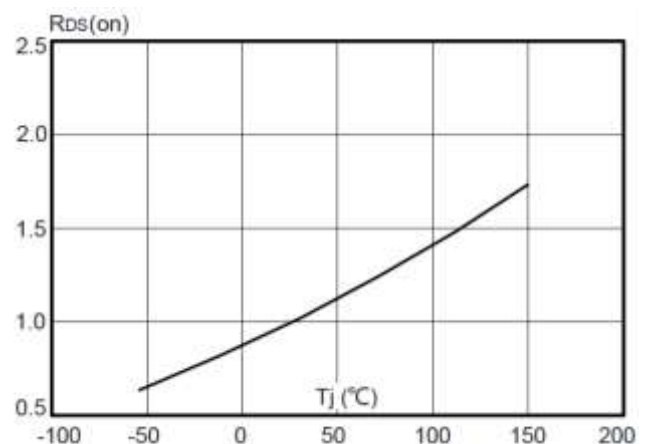
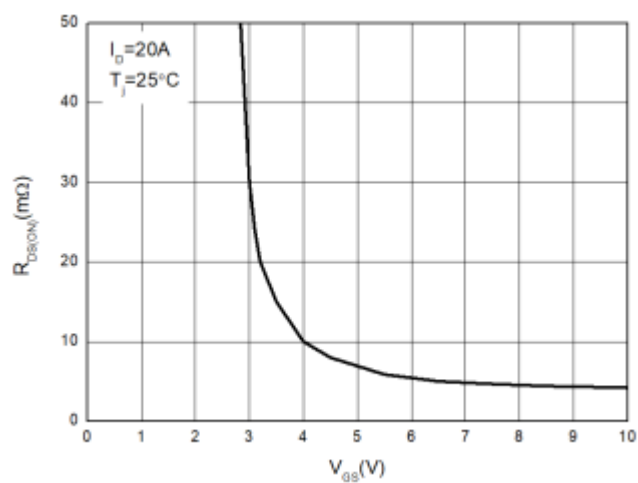
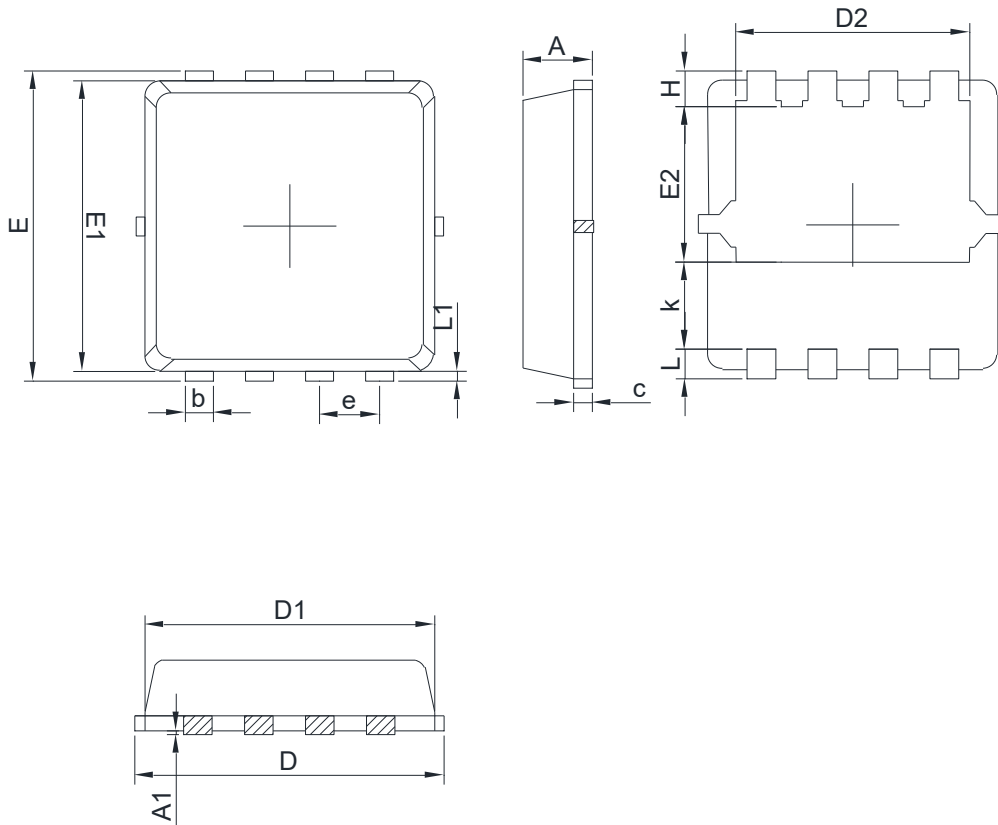


Figure7: On-resistance vs. Gate to Source



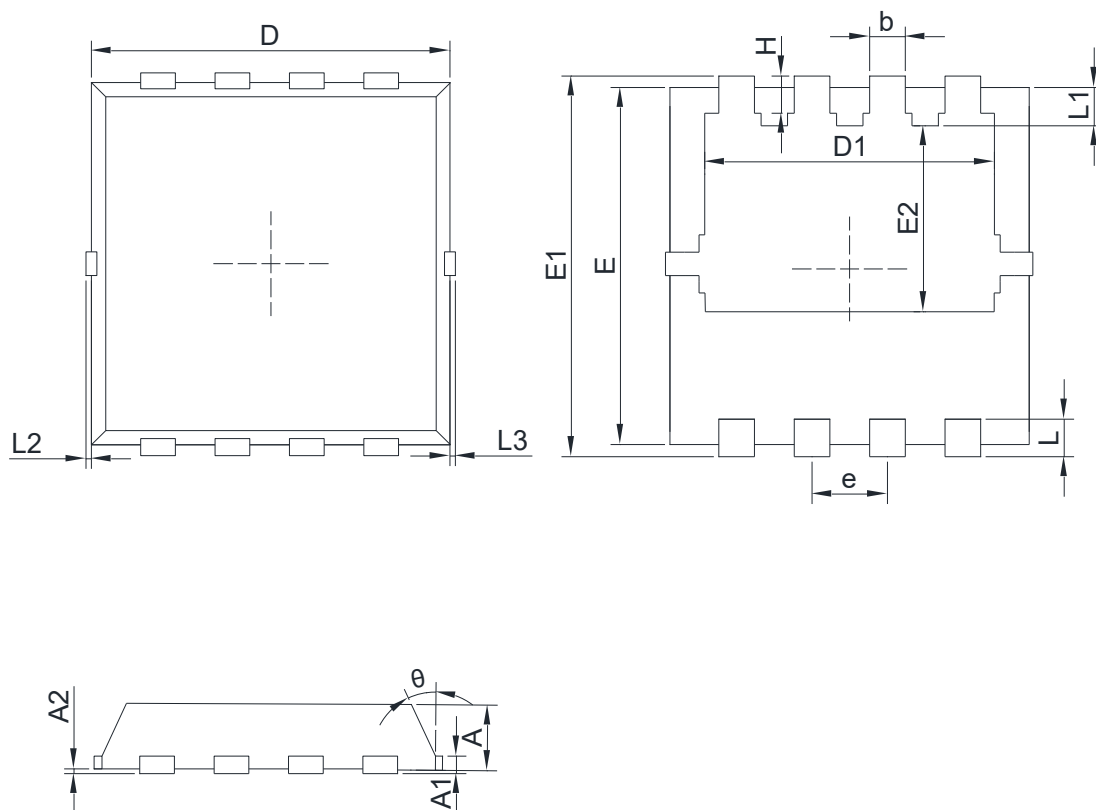
8. Dimension (PDFN3*3-8L)

POD A(Q)



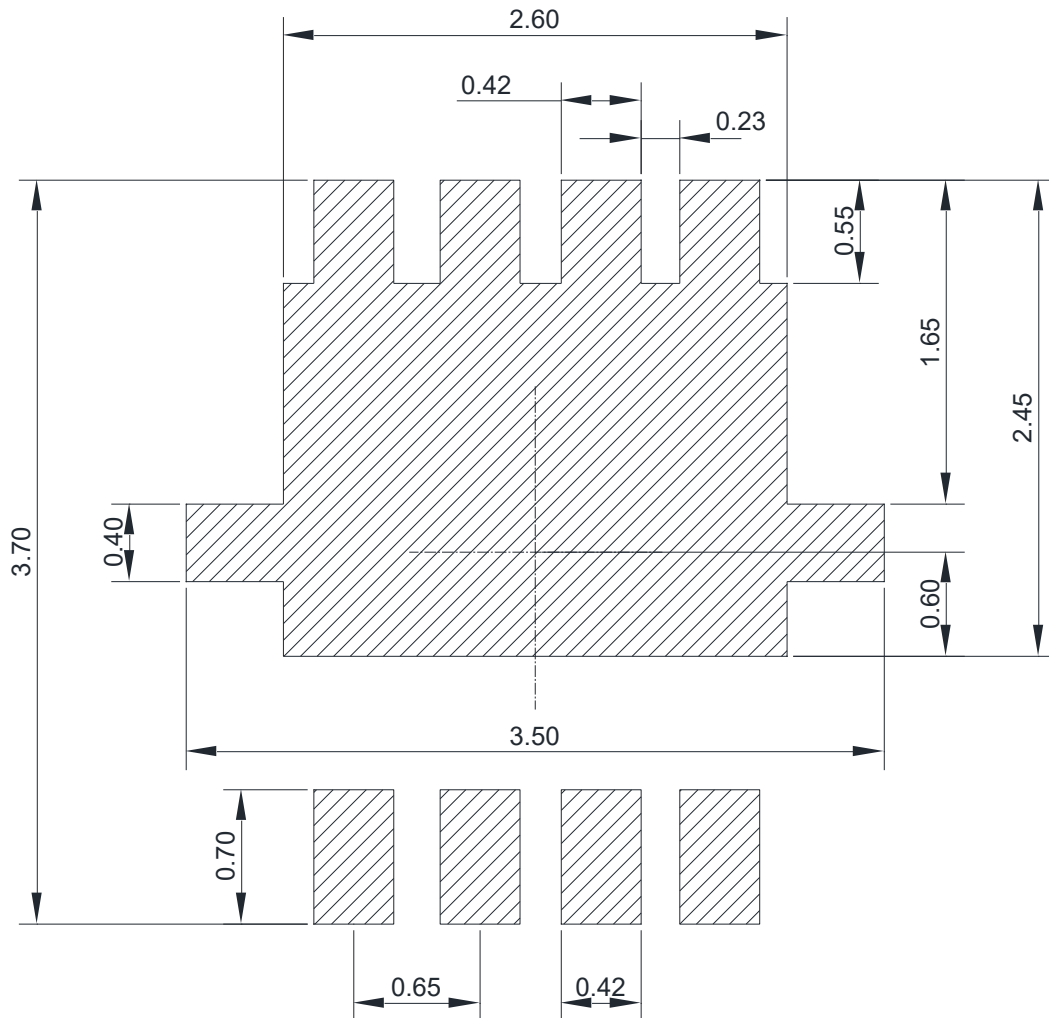
Symbol	Dimensions in Millimeters			Symbol	Dimensions in Millimeters		
	Min.	NOM.	Max.		Min.	NOM.	Max.
A	0.65	0.75	0.85	H	0.385	0.485	0.585
A1			0.05	k	0.80		
b	0.20	0.30	0.40	L	0.30	0.40	0.50
c	0.10	0.15	0.25	e	0.65BCS		
D	3.05	3.20	3.35	L1	0.025	0.125	0.225
D1	3.05	3.15	3.25	D2	2.30	2.45	2.60
E	3.25	3.35	3.45	E2	1.36	1.51	1.66
E1	3.00	3.10	3.20				

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	2.300	2.450	2.600	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	1.320	1.520	1.720	θ	8°	10°	12°

9. Recommended Soldering Footprint



DIMENSIONS: MILLIMETERS

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