

NTMFS5C670NLT1G(ES)

Rev-1.1

SuperMOS –PDFN5*6-8L 60V BV_{DSS}, 4.6mΩ R_{DS(ON)}, N-channel MOSFET

1. Description

The NTMFS5C670NLT1G(ES) 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 NTMFS5C670NLT1G(ES) is Pb-free.

2. Features

- 60V, R_{DS(ON)}=4.6mΩ(Typ.) @V_{GS}=10V
R_{DS(ON)}=5.4mΩ(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

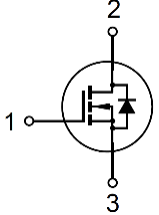
Part Number	Package	Marking	Material	Packaging	Quantity per Reel	Flammability Rating	Reel Size
NTMFS5C670NLT1G(ES)	PDFN5*6-8L	.NJ06R06/L OT	Halogen free	Tape & Reel	5,000 PCS	UL 94V-0	13 inches

5. Pin Configuration and Functions

Pin	Function	Outline	Circuit Diagram
4	Gate	Note 2	
1/2/3	Source		

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5/6/7/8	Drain		
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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}	60	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C=25^{\circ}\text{C}$	I_D	80	A
	$T_C=100^{\circ}\text{C}$		48	
Maximum Power Dissipation		P_D	65.7	W
Pulsed Drain Current		I_{DM}	320	A
Single Pulsed Avalanche Current ¹		I_{AS}	26.5	A
Single Pulsed Avalanche Energy ¹		E_{AS}	175	mJ
Operating Junction Temperature		T_J	-55 to 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	$R_{\theta JC}$		1.9	$^{\circ}\text{C/W}$

Notes:

1. EAS condition : $T_J=25^{\circ}\text{C}$, $V_{DD}=30\text{V}$, $V_G=10\text{V}$, $L=0.5\text{mH}$, $R_g=25\Omega$.
2. This diagram is only an electrical schematic, and the actual pin size is based on POD.

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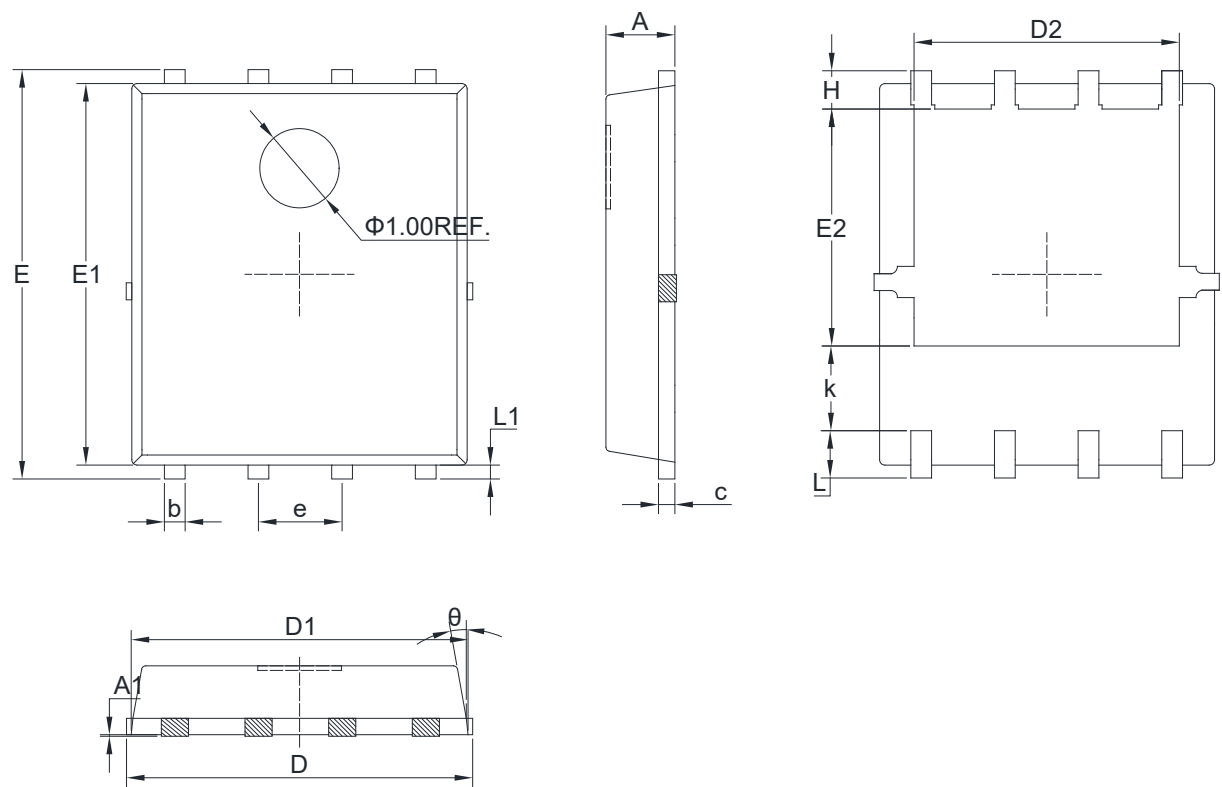
Electrical Characteristics

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	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, 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	1.2	1.6	2.2	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		4.6	6	mΩ
		V _{GS} =4.5V, I _D =10A		5.4	7	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} =0V, f=1MHz, V _{DS} =25V		4765		pF
Output Capacitance	C _{OSS}			277		
Reverse Transfer Capacitance	C _{RSS}			245		
Total Gate Charge	Q _{G(TOT)}	V _{GS} =0 to 10V, V _{DS} =30V, I _D =10A		98		nC
Gate-to-Source Charge	Q _{GS}			12.5		
Gate-to-Drain Charge	Q _{GD}			32		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{d(ON)}	V _{GS} =10V, V _{DD} =30V, I _D =15A, R _G =1.8Ω		9		ns
Rise Time	t _r			6.1		
Turn-Off Delay Time	t _{d(OFF)}			33.2		
Fall Time	t _f			7.5		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} =0V, I _S =20A			1.2	V

7. Dimension (PDFN5*6-8L)

POD A(Q)

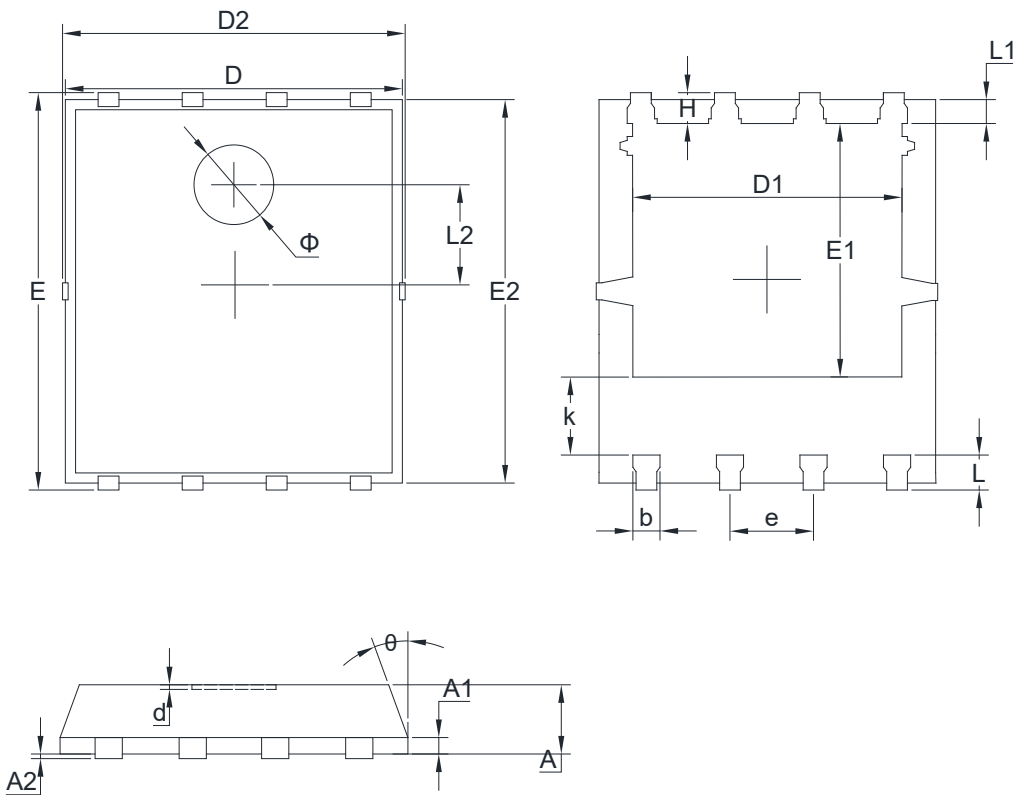


Symbol	Dimensions in Millimeters			Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX		MIN	NOM	MAX
A	0.90	1.00	1.10	H	0.46	0.56	0.66
A1			0.05	k	1.10		
b	0.30	0.40	0.50	L	0.51	0.61	0.71
c	0.20	0.25	0.30	L1	0.05	0.15	0.25
D	4.80	5.10	5.40	θ	8°	10°	12°
D2	3.75	3.90	4.05	D1	4.80	4.90	5.00
E	5.95	6.05	6.15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

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POD B(X)



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				

Technical drawing of a mechanical part, likely a cross-section of a gear or a similar component. The drawing shows a hatched rectangular body with a total width of 4.60 and a total height of 6.15. The top surface features four rectangular features, each with a width of 0.50 and a height of 0.55. The distance between the centers of these features is 0.635. The bottom surface also features four rectangular features, each with a width of 0.50 and a height of 0.65. The distance between the centers of these features is 1.27. The overall height of the part is 6.15, and the overall width is 4.60. The hatching indicates the material of the part.

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