

SuperMOS – PDFN3*3-8L 30V BV_{DSS} , 2.4m Ω $R_{DS(ON)}$, N-channel MOSFET

1. Description

The TPN2R703NL,L1Q(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 TPN2R703NL,L1Q(ES) is Pb-free.

2. Features

- 30V, $R_{DS(ON)}=2.4m\Omega$ (TYP.) @ $V_{GS}=10V$
 $R_{DS(ON)}=3.6m\Omega$ (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

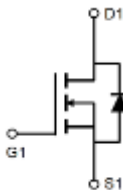
Part Number	Package	Marking	Material	Packaging	Quantity per reel	Flammability Rating	Reel Size
TPN2R703NL,L1Q(ES)	PDFN3*3-8L	.NH03R031/L OT	Halogen free	Tape & Reel	5,000 PCS	UL 94V-0	13 inches

5. Pin Configuration and Functions

Pin	Function	Outline	Circuit Diagram
4	Gate		

TPN2R703NL,L1Q(ES)

Rev-1.1

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	$T_C=25^\circ\text{C}$	I_D	80	A
	$T_C=100^\circ\text{C}$		48	
Maximum Power Dissipation		P_D	33.7	W
Pulsed Drain Current		I_{DM}	320	A
Avalanche Energy, Single Pulsed ^a		E_{AS}	169	mJ
Operating Junction Temperature		T_J	-55 to 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	$R_{\theta JC}$		3.7	°C/W

Note:

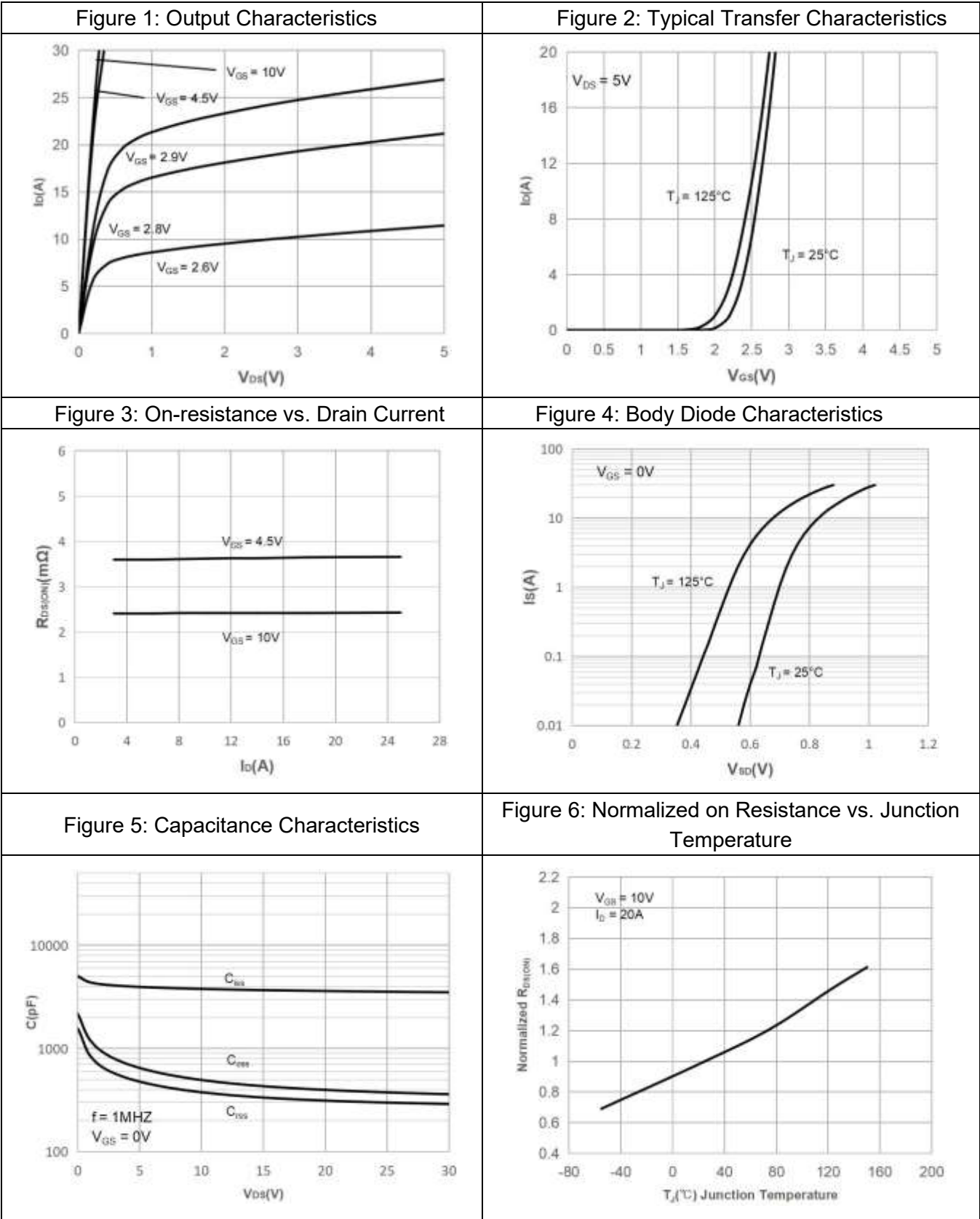
a: EAS condition: $T_J=25^\circ\text{C}$, $V_{DD}=15\text{V}$, $V_G=10\text{V}$, $L=0.5\text{mH}$, $R_g=25\Omega$, $I_{AS}=26\text{A}$.

Electrical Characteristics

At TA = 25°C unless otherwise specified

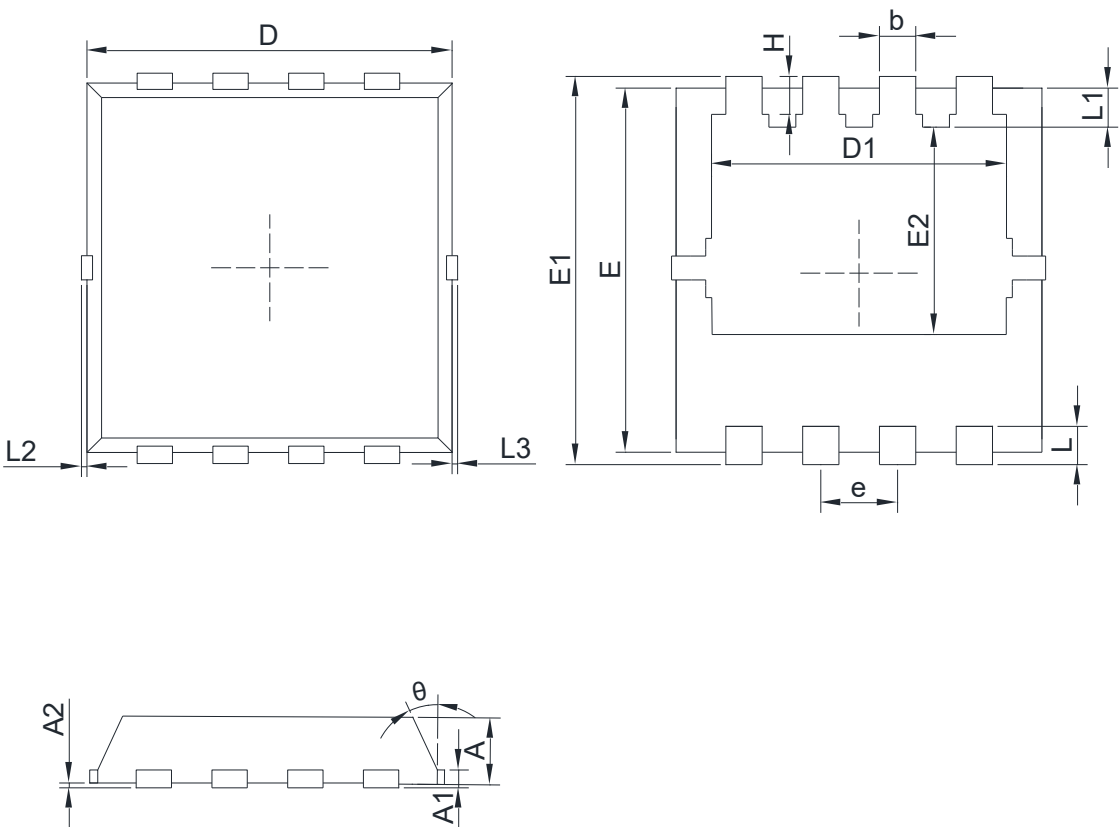
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V			1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250uA	1.0	1.6	2.2	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		2.4	3.1	mΩ
		V _{GS} =4.5V, I _D =10A		3.6	4.7	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} =0V, f=1MHz, V _{DS} =15V		3767		pF
Output Capacitance	C _{OSS}			442		
Reverse Transfer Capacitance	C _{RSS}			340		
Total Gate Charge	Q _G	V _{GS} =0 to 10V, V _{DD} =15V, I _D =15 A		67		nC
Gate-to-Source Charge	Q _{GS}			11		
Gate-to-Drain Charge	Q _{GD}			19		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{d(ON)}	V _{GS} =10V, V _{DD} =15V I _D =30A, R _G =3Ω		10		ns
Rise Time	t _r			19		
Turn-Off Delay Time	t _{d(OFF)}			50		
Fall Time	t _f			20		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} =0V, I _S =30A			1.2	V

7. Typical Characteristics



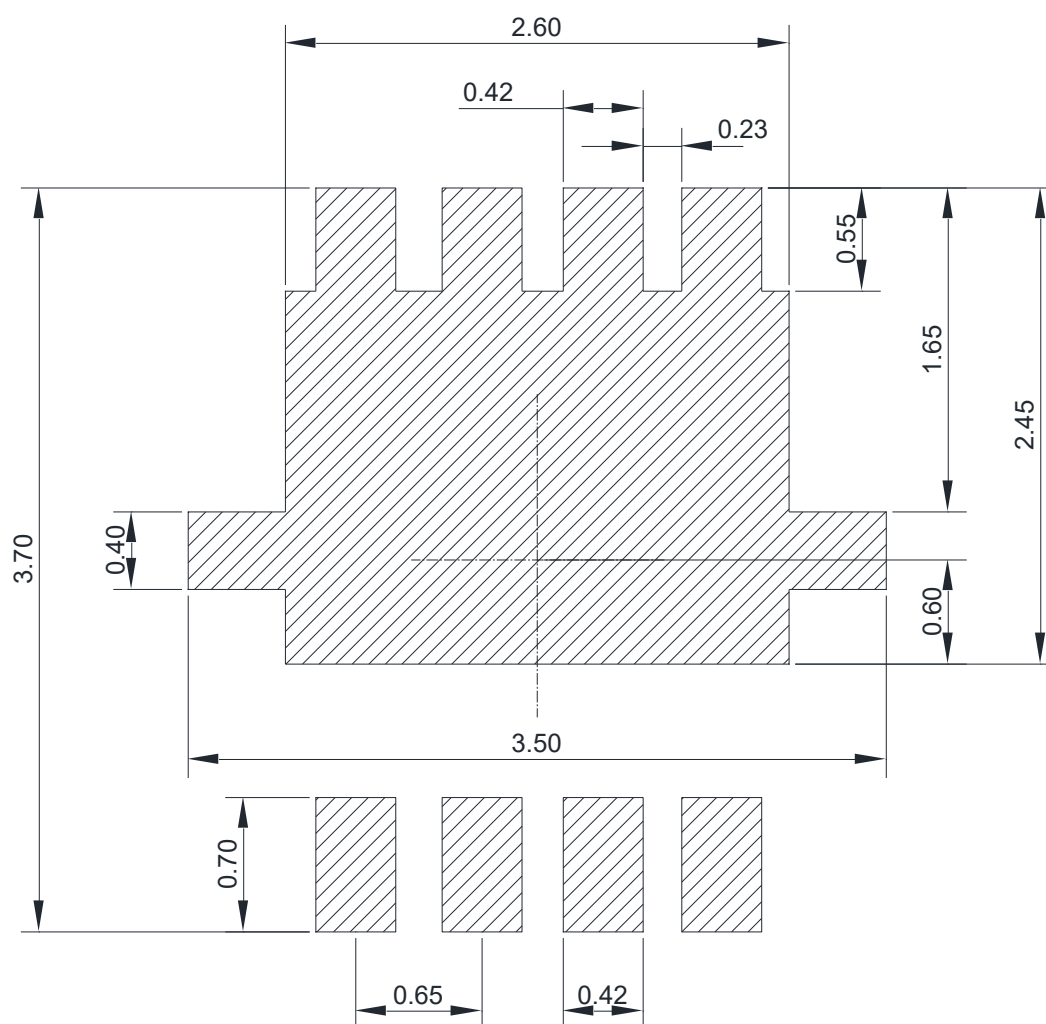
8. Dimension (PDFN3*3-8L)

POD(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	1.535	1.735	1.935	θ	8°	10°	12°

9. Recommended Soldering Footprint



DIMENSIONS: MILLIMETERS

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