

150V N-Channel Enhancement Mode MOSFET

Description

The AP4N15LI uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

$V_{DS} = 150V$ $I_D = 4A$

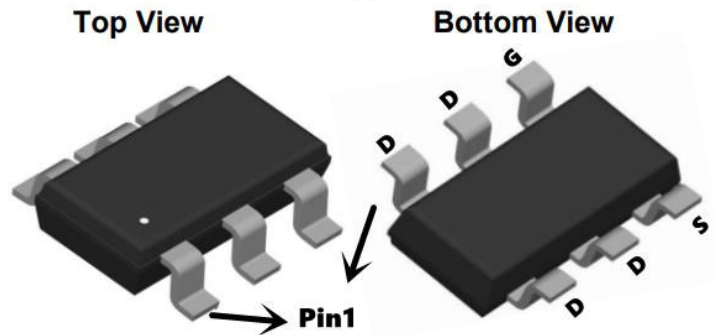
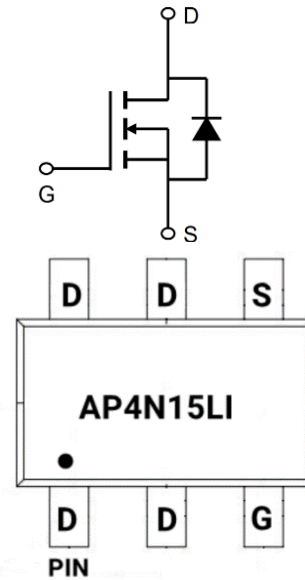
$R_{DS(ON)} < 320m\Omega @ V_{GS}=10V$ (Type: 260m Ω)

Application

Automotive lighting

Load switch

Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AP4N15LI	SOT23-6L	AP4N15LI	3000

Absolute Maximum Ratings (TC=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	150	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Drain Current, V _{GS} @ 10V	4	A
I _D @T _C =100°C	Drain Current, V _{GS} @ 10V	2.8	A
IDM	Pulsed Drain Current ¹	12	A
P _D @T _C =25°C	Total Power Dissipation	2	W
P _D @T _A =25°C	Total Power Dissipation ³	1.1	W
TSTG	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C
R θ JA	Maximum Thermal Resistance, Junctionambient	125	°C/W
R θ JC	Maximum Thermal Resistance, Junction-case	3.9	°C/W



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Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	VGS=0V, ID=250μA	150	170		V
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	1	1.6	3	V
IGSS	Gate Leakage Current	VDS=0V, VGS=±20V			±100	nA
IDSS	Zero Gate Voltage Drain Current	VDS=150V, VGS=0V			1	μA
RDS(ON)	Drain-Source On-Resistance	VGS=10V, ID= 7A		260	320	mΩ
RDS(ON)	Drain-Source On-Resistance	VGS=4.5V, ID= 6A		300	380	mΩ
VSD	Diode Forward Voltage	IS=1.8A, VGS=0V		0.8	1.2	V
Qg	Total Gate Charge	VDS=75V, VGS=10V, ID=10A		17.5		nC
Qgs	Gate-Source Charge			4.5		nC
Qgd	Gate-Drain Charge			4.7		nC
Ciss	Input Capacitance	VDS=25V, VGS=0V,f=1MHz		538		pF
Coss	Output Capacitance			55		pF
Crss	Reverse Transfer Capacitance			21		pF
td(on)	Turn-On Delay Time	VDS=75V, RL =10.68Ω, VGEN=10V, RG=6Ω		11.6		ns
tr	Turn-On Rise Time			9.3		ns
td(off)	Turn-Off Delay Time			29.3		ns
tf	Turn-Off Fall Time			3.7		ns

Note :

- 1、 The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、 The power dissipation is limited by 150°C junction temperature
- 4、 The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation.

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Typical Characteristics

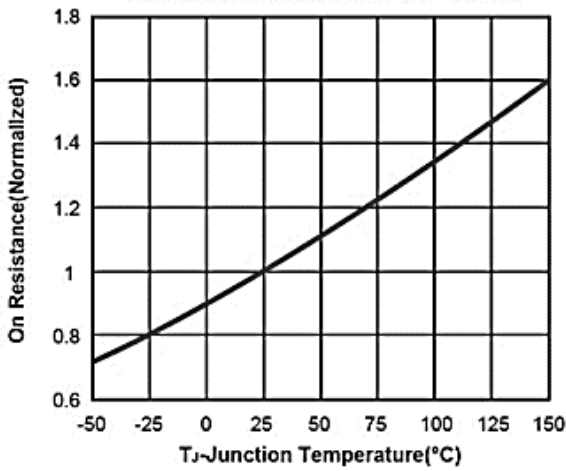


Fig.1 On Resistance Vs Junction Temperature

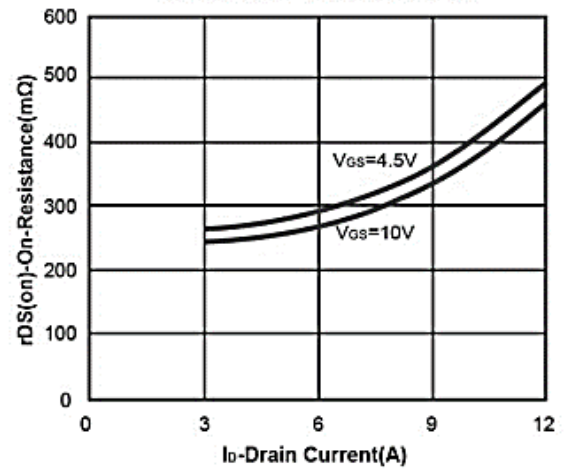


Fig.2 On-Resistance Vs. Drain Current

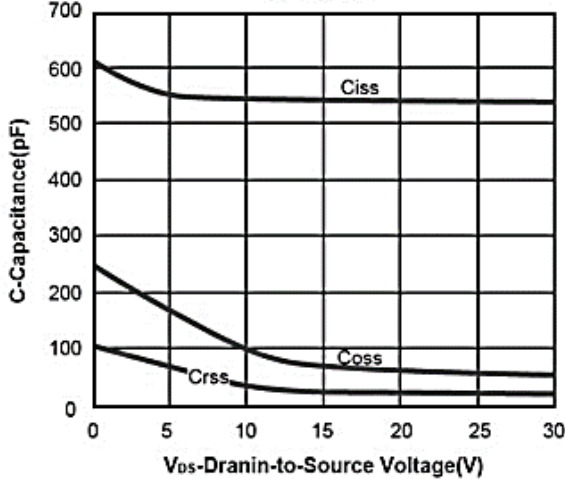


Fig.3 Capacitance

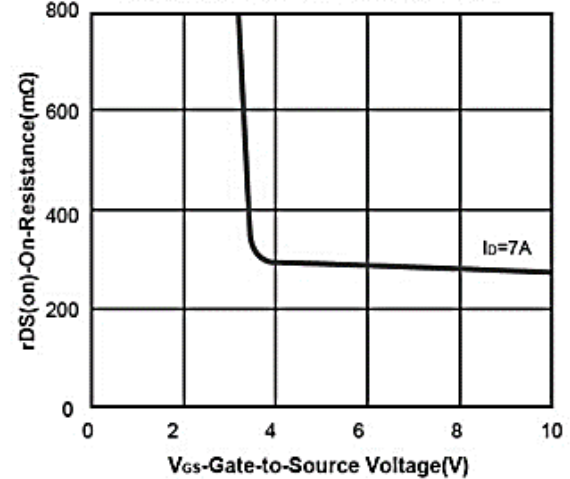


Fig.4 On-Resistance Vs. Gate-to-Source Voltage

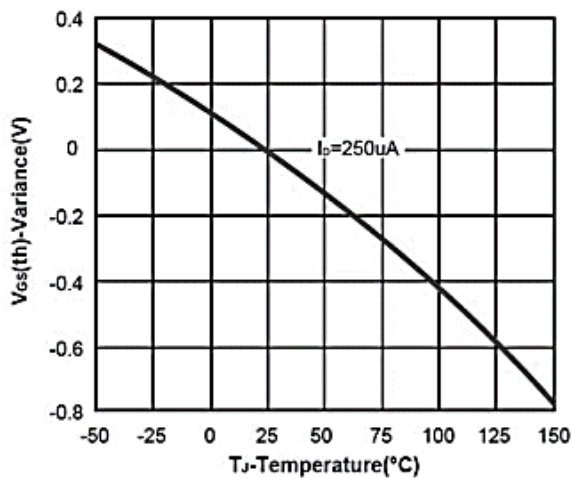


Fig.5 Threshold Voltage

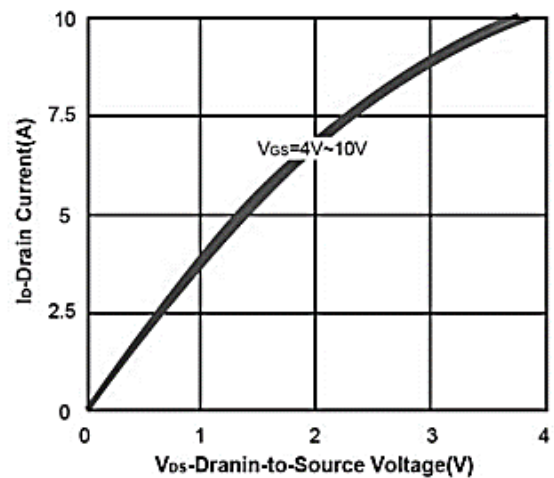


Fig.6 On-Region Characteristics

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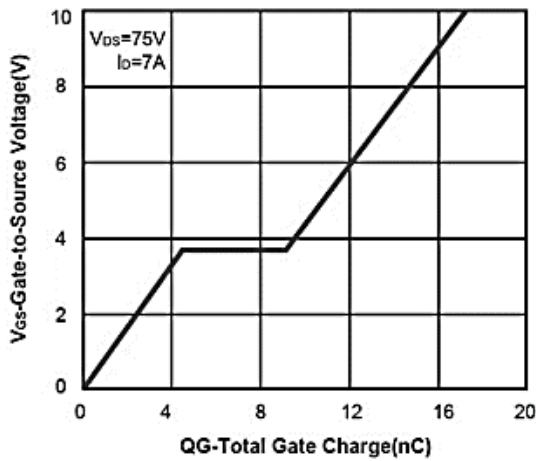


Fig.7 Gate Charge

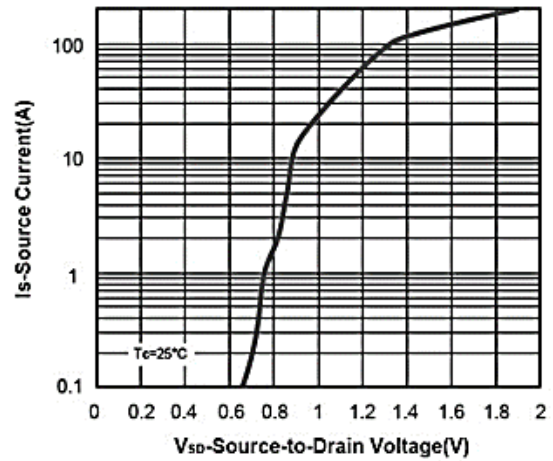


Fig.8 Body-diode Characteristic

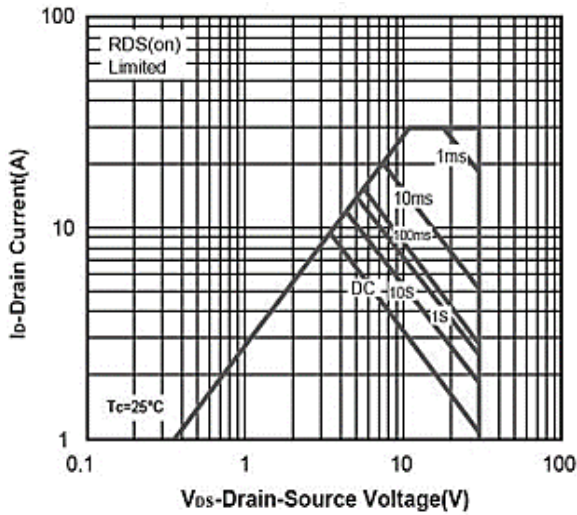


Fig.9 Safe Operating Area

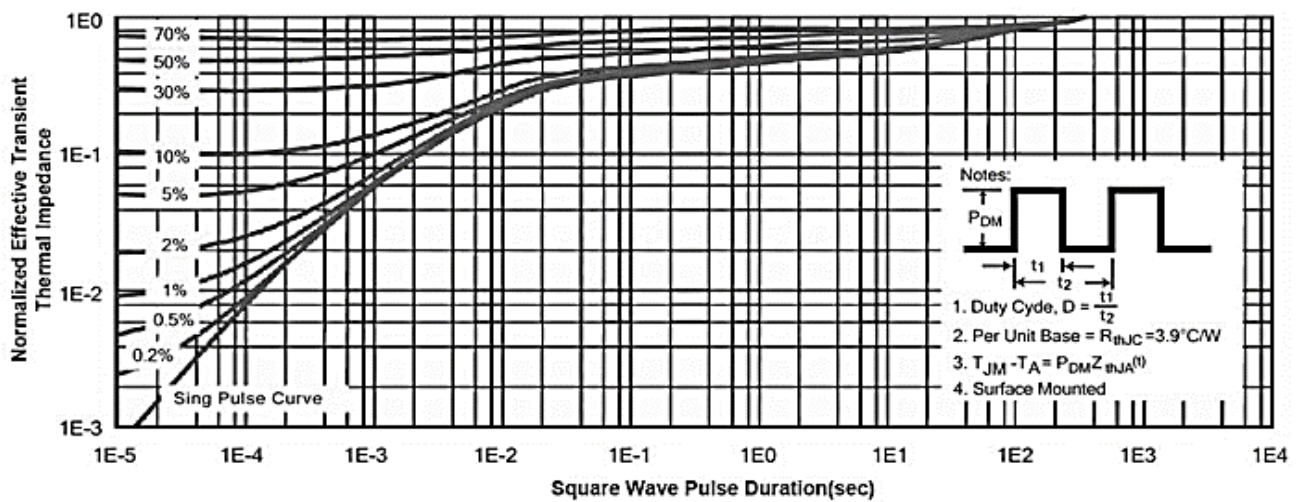
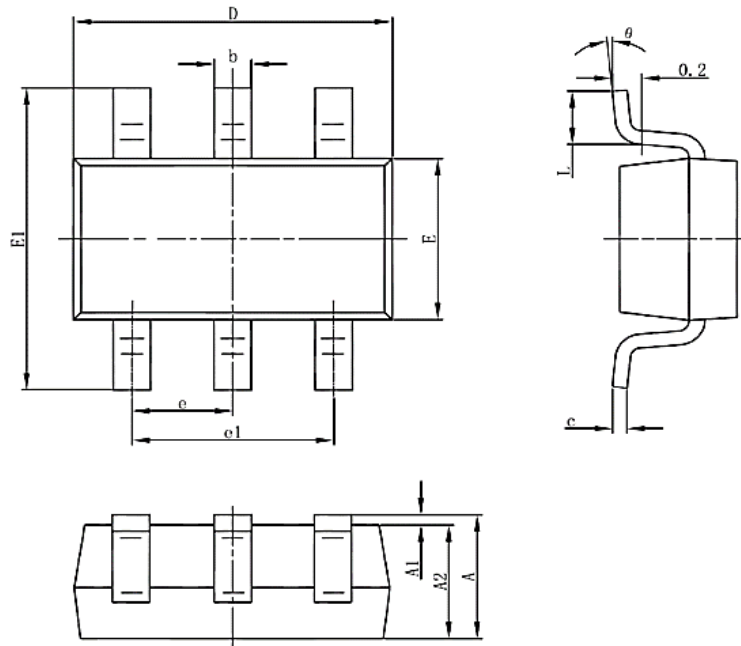


Fig.10 Normalized Maximum Transient Thermal Impedance

150V N-Channel Enhancement Mode MOSFET Package Mechanical Data-SOT23-6-Single



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
C	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 (BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0	8	0	8