

20V Dual N-Channel Enhancement Mode MOSFET

Description

The PECN7222EMR uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a load switch applications.

General Features

- ◆ $V_{DS} = 20V, I_D = 6A$
 $R_{DS(ON)} = 20m\Omega$ (typical) @ $V_{GS} = 4.5V$
 $R_{DS(ON)} = 24m\Omega$ (typical) @ $V_{GS} = 2.5V$
- ◆ High power and current handing capability
- ◆ Lead free product is acquired
- ◆ Surface mount package
- ◆ ESD Protected up to 2kV HBM

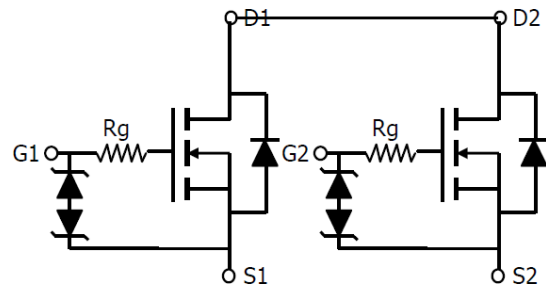
Application

- ◆ Battery protection
- ◆ Load switch
- ◆ Power management

Package

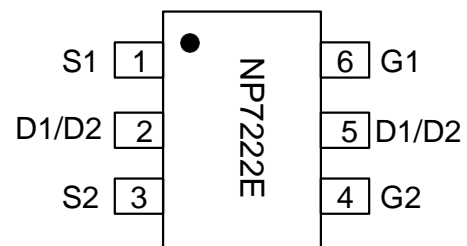
- ◆ SOT23-6L

Schematic diagram



Marking and pin assignment

SOT23-6L
(Topview)



NP: Natlinear Power

7222: Product No.

E: with ESD Protected

Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
PECN7222EMR-G	-55°C to +150°C	SOT23-6L	3000

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

parameter	symbol	limit	unit	
Drain-source voltage	V_{DS}	20	V	
Gate-source voltage	V_{GS}	±12	V	
Drain Current-Continuous (Silicon Limited)	I_D	$T_A = 25^\circ C$	6	A
		$T_A = 75^\circ C$	4	
Pulsed Drain Current (Package Limited)	I_{DM}	24	A	
Maximum power dissipation	P_D	$T_A = 25^\circ C$	1.5	W
		$T_A = 75^\circ C$	1	
Operating junction Temperature range	T_j	-55—150	°C	

Electrical Characteristics (TA=25°C unless otherwise noted)

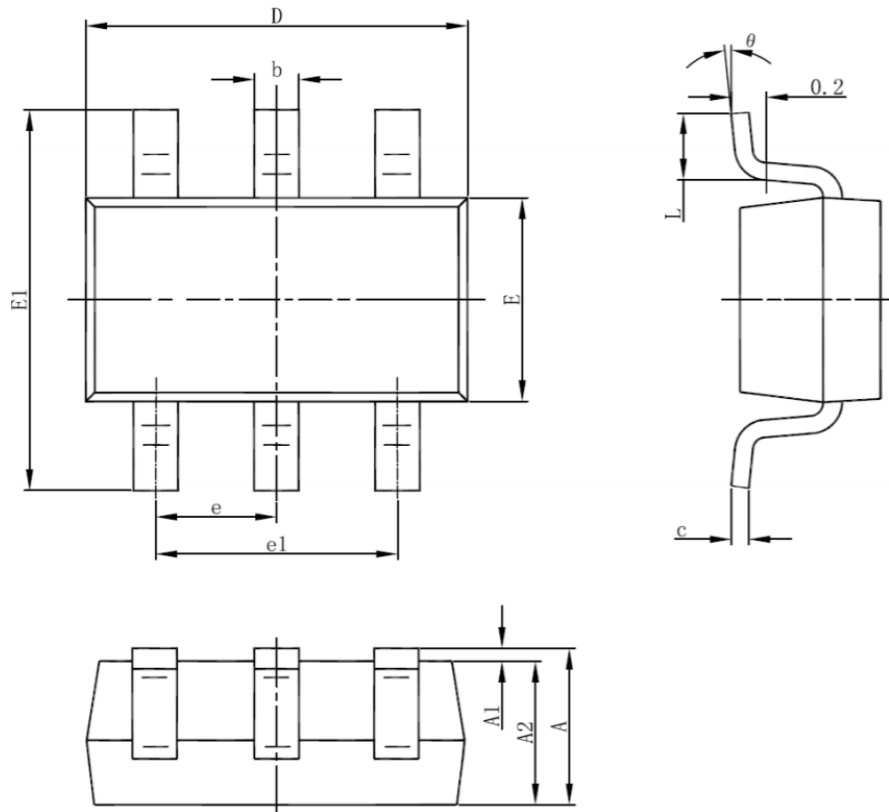
Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
Drain-source breakdown voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$	-	-	1	μA
Gate-body leakage	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 8V$	-	-	± 100	nA
		$V_{DS}=0V, V_{GS}=\pm 12V$			± 5	μA
ON Characteristics						
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.65	1.2	V
Drain-source on-state resistance	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=6A$	-	20	26	m Ω
		$V_{GS}=2.5V, I_D=5A$	-	24	30	
Forward transconductance	g_{fs}	$V_{DS}=5V, I_D=6A$	-	10	-	S
Dynamic Characteristics						
Input capacitance	C_{ISS}	$V_{DS}=10V, V_{GS}=0V$ $f=1.0MHz$	-	180	-	pF
Output capacitance	C_{OSS}		-	95	-	
Reverse transfer capacitance	C_{RSS}		-	18	-	
Gate resistance	R_g	$V_{DS}=0V, V_{GS}=0V$ $f=1.0MHz$		2.7		k Ω
Switching Characteristics						
Turn-on delay time	$t_{D(ON)}$	$V_{DS}=10V$ $V_{GS}=4.5V$ $R_L=10\Omega$ $R_{GEN}=6\Omega$	-	60	-	ns
Rise time	t_r		-	82	-	
Turn-off delay time	$t_{D(OFF)}$		-	580	-	
Fall time	t_f		-	243	-	
Total gate charge	Q_g	$V_{DS}=10V, I_D=6A$ $V_{GS}=4.5V$	-	8.5	-	nC
Gate-source charge	Q_{gs}		-	1.4	-	
Gate-drain charge	Q_{gd}		-	3	-	

Thermal Characteristics

Thermal Resistance junction-to ambient	$R_{th JA}$	100	$^{\circ}C/W$
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Package Information

- SOT23-6L



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°