

## 100V P-Channel Enhancement Mode MOSFET

### Description

The PECN2P10MR uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , low gate charge and high density cell Design for ultra low on-resistance. This device is suitable for use as a load switch or in PWM applications.

### General Features

- ◆  $V_{DS} = -100V$ ,  $I_D = -2A$   
 $R_{DS(ON)}(Typ.) = 255m\Omega$  @  $V_{GS} = -10V$   
 $R_{DS(ON)}(Typ.) = 280m\Omega$  @  $V_{GS} = -4.5V$
- ◆ High switching speed
- ◆ Improved dv/dt capability
- ◆ Low Gate Charge
- ◆ Low reverse transfer capacitance
- ◆ Lead free in compliance with EU RoHS 2.0

### Application

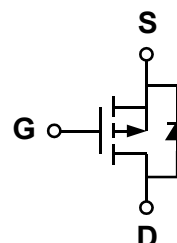
- ◆ PWM applications
- ◆ Load switch

### Package

- ◆ SOT-23-3L

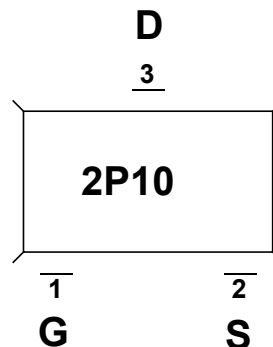


### Schematic diagram



### Marking and pin assignment

SOT-23-3L  
(TOP VIEW)



### Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
PECN2P10M R-G	-55°C to +150°C	SOT-23-3L	3000

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

parameter	symbol	limit	unit	
Drain-source voltage	$V_{DS}$	-100	V	
Gate-source voltage	$V_{GS}$	±20	V	
Continuous Drain Current	$I_D$	$T_A = 25^\circ C$	-2	A
		$T_A = 70^\circ C$	-1.5	A
Pulsed Drain Current <sup>C</sup>	$I_{DM}$	-8	A	
Maximum power dissipation <sup>B</sup>	$P_D$	$T_A = 25^\circ C$	1.4	W
		$T_A = 70^\circ C$	0.9	W
Operating junction Temperature range	$T_j$	-55—150	°C	

## Thermal Characteristics

Parameter		Symbol	Typ	Max	Unit
Maximum Junction-to-Ambient <sup>A</sup>	≤ 10s	R <sub>θJA</sub>	70	90	°C/W
Maximum Junction-to-Ambient <sup>A D</sup>	Steady-State		100	125	
Maximum Junction-to-Lead <sup>B</sup>	Steady-State	R <sub>θJL</sub>	63	80	

A. The value of R<sub>θJA</sub> is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub> =25°C. The value in any given application depends on the user's specific board design.

B. The power dissipation P<sub>D</sub> is based on T<sub>J(MAX)</sub>=150°C, using ≤ 10s junction-to-ambient thermal resistance.

C. Repetitive rating, pulse width limited by junction temperature T<sub>J(MAX)</sub>=150°C. Ratings are based on low frequency and duty cycles to keep initialT<sub>J</sub>=25°C.

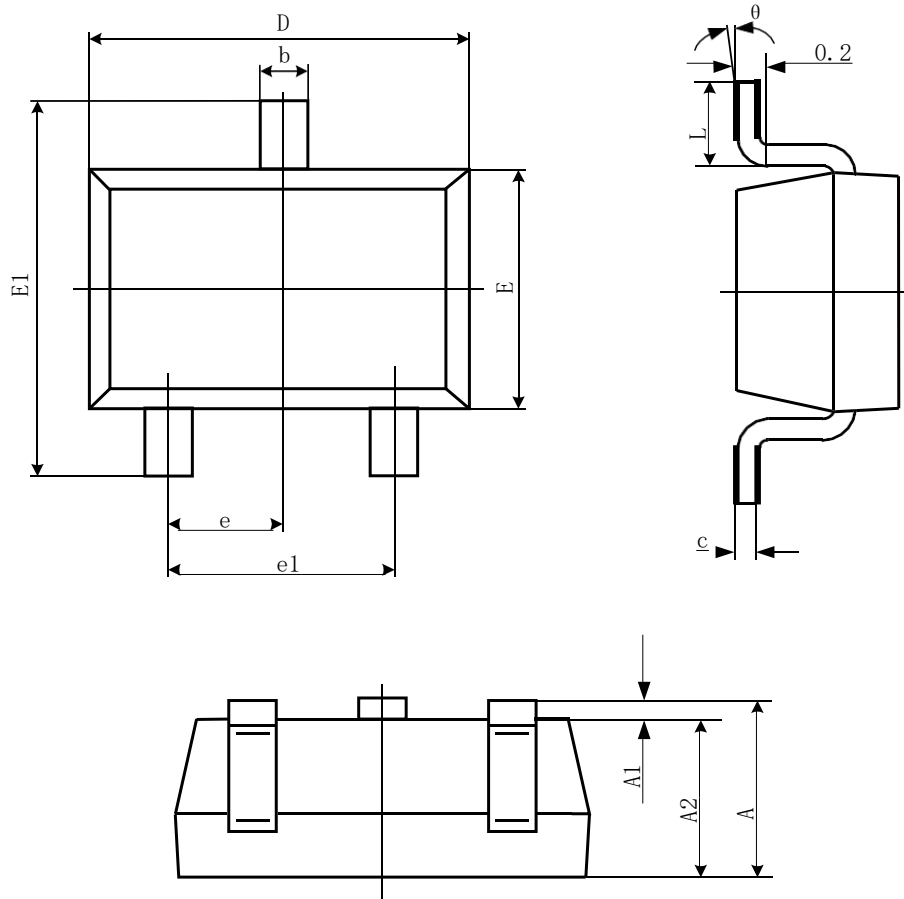
D. The R<sub>θJA</sub> is the sum of the thermal impedance from junction to lead R<sub>θJL</sub> and lead to ambient.

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Drain-source breakdown voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	-100	-	-	V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =-100V, V <sub>GS</sub> =0V	-	-	1	μA
Gate-body leakage	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V	-	-	±100	nA
<b>ON Characteristics</b>						
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-1.0	-2.0	-3.0	V
Drain-source on-state resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-2A	-	255	325	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-1A		280	350	
<b>Dynamic Characteristics</b>						
Input capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =-50V, V <sub>GS</sub> =0V f=1.0MHz	-	900	-	pF
Output capacitance	C <sub>OSS</sub>		-	50	-	
Reverse transfer capacitance	C <sub>RSS</sub>		-	41	-	
<b>Switching Characteristics</b>						
Turn-on delay time	t <sub>D(ON)</sub>	V <sub>DD</sub> =-50V R <sub>L</sub> =33 ohm V <sub>GS</sub> =-10V R <sub>G</sub> =6.2ohm	-	7.1	-	ns
Rise time	tr		-	47	-	
Turn-off delay time	t <sub>D(OFF)</sub>		-	38	-	
Fall time	tf		-	41	-	
Total gate charge	Qg	V <sub>DS</sub> =-50V I <sub>D</sub> =-2A V <sub>GS</sub> =-10V	-	16	-	nC
Gate-source charge	Qgs		-	3.5	-	
Gate-drain charge	Qgd		-	2.8	-	
<b>DRAIN-SOURCE DIODE CHARACTERISTICS</b>						
Diode forward voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =-1A	-	-0.82	-1.2	V

## Package Information

- SOT-23-3L



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
$\theta$	0°	8°	0°	8°