

## 100V N-Channel Enhancement Mode MOSFET

### Description

The PECN4N10PR 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

- ◆  $V_{DS} = 100V$ ,  $I_D = 4A$   
 $R_{DS(ON)}(Typ.) = 150m\Omega$  @  $V_{GS} = 10V$   
 $R_{DS(ON)}(Typ.) = 160m\Omega$  @  $V_{GS} = 4.5V$
- ◆ High power and current handing capability
- ◆ Lead free product is acquired
- ◆ Surface mount package

### Application

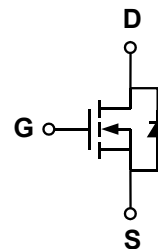
- ◆ PWM applications
- ◆ Load switch

### Package

- ◆ SOT-89-3L

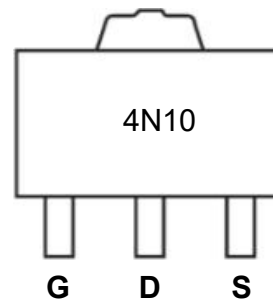


### Schematic diagram



### Marking and pin assignment

SOT-89-3L  
(TOP VIEW)



### Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
PECN4N10P R-G	-55°C to +150°C	SOT-89	1000

### 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
Drain current-continuous <sup>a</sup> @Tj=125°C -pulse <sup>d</sup>	$I_D$	4	A
	$I_{DM}$	16	A
Drain-source Diode forward current	$I_S$	4	A
Maximum power dissipation	$P_D$	1.25	W
Operating junction Temperature range	$T_j$	-55—150	°C

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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Drain-source breakdown voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V$	-	-	1	$\mu A$
Gate-body leakage	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	$\pm 100$	nA
<b>ON Characteristics</b>						
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.6	2.5	V
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=4A$	-	150	165	m $\Omega$
		$V_{GS}=4.5V, I_D=4A$		160	175	
Forward transconductance	gfs	$V_{GS}=5V, I_D=5A$	1	-	-	S
<b>Dynamic Characteristics</b>						
Input capacitance	$C_{ISS}$	$V_{DS}=50V, V_{GS}=0V$ $f=1.0MHz$	-	650	-	pF
Output capacitance	$C_{OSS}$		-	24	-	
Reverse transfer capacitance	$C_{RSS}$		-	20	-	
<b>Switching Characteristics</b>						
Turn-on delay time	$t_{D(ON)}$	$V_{DD}=50V$ $R_L=19\text{ ohm}$ $V_{GS}=10V$ $R_G=3\text{ohm}$	-	6	-	ns
Rise time	tr		-	4	-	
Turn-off delay time	$t_{D(OFF)}$		-	20	-	
Fall time	tf		-	4	-	
Total gate charge	Qg	$V_{DS}=50V$ $I_D=1A$ $V_{GS}=10V$	-	20	-	nC
Gate-source charge	Qgs		-	2.1	-	
Gate-drain charge	Qgd		-	3	-	
<b>DRAIN-SOURCE DIODE CHARACTERISTICS</b>						
Diode forward voltage	$V_{SD}$	$V_{GS}=0V, I_S=2A$	-	0.76	1.16	V

### Notes:

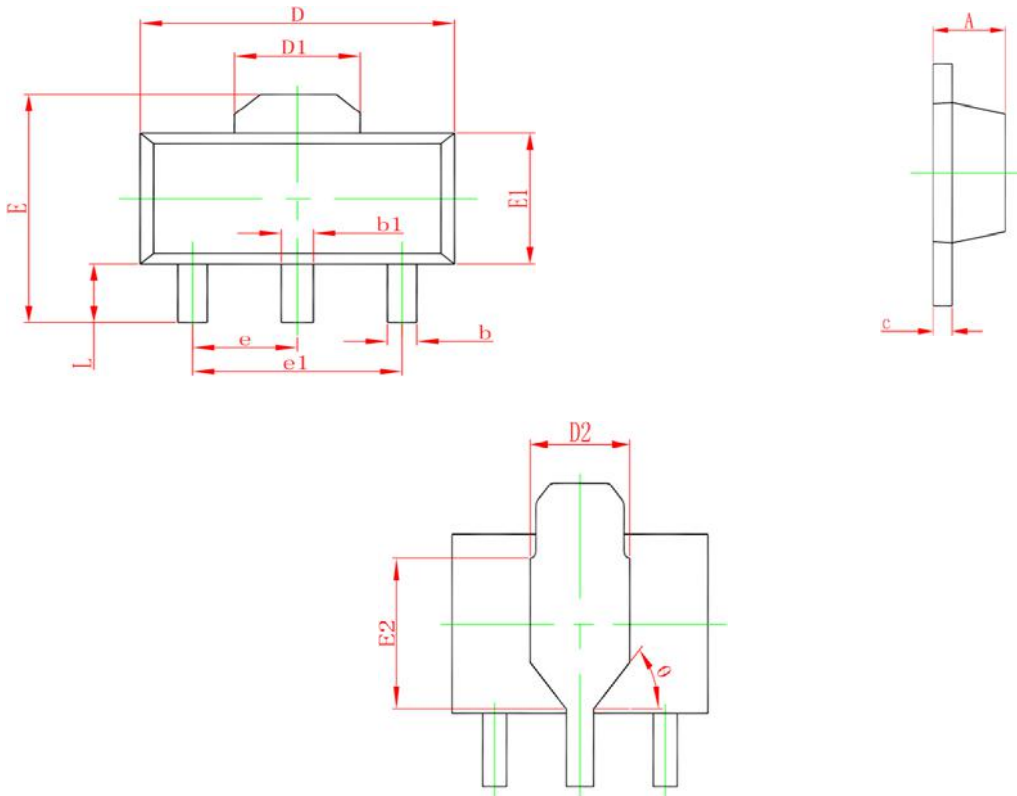
- surface mounted on FR4 board,  $t \leq 10\text{sec}$
- pulse test: pulse width  $\leq 300\mu s$ , duty  $\leq 2\%$
- guaranteed by design, not subject to production testing

## Thermal Characteristics

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

- SOT-89-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.380	0.580	0.015	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
D2	1.750 REF.		0.069 REF.	
E	3.940	4.250	0.155	0.167
E1	2.300	2.600	0.091	0.102
E2	1.900 REF.		0.075 REF.	
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047
θ	45°		45°	