

## 60V P-Channel Enhancement Mode MOSFET

### Description

The PECN50P06G uses advanced trench technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge. It can be used in a wide variety of applications.

### General Features

- ◆  $V_{DS} = -60V$   $I_D = -50A$   
 $R_{DS(ON)}(Typ.) = 22m\Omega$  @  $V_{GS} = -10V$   
 $R_{DS(ON)}(Typ.) = 27m\Omega$  @  $V_{GS} = -4.5V$
- ◆ High density cell design for ultra low  $R_{DS(ON)}$
- ◆ Fully characterized avalanche voltage and current
- ◆ Good stability and uniformity with high  $E_{AS}$
- ◆ Excellent package for good heat dissipation

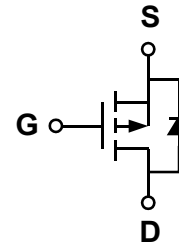
### Application

- ◆ Load switch

### Package

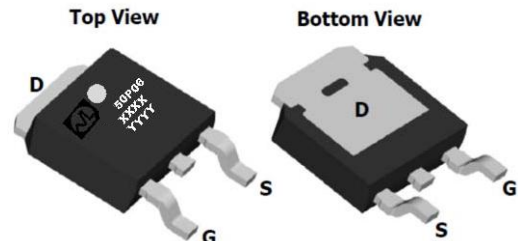
- ◆ TO-252-2L *100% UIS TESTED!*  
*100%  $\Delta V_{ds}$  TESTED!*

### Schematic diagram



### Marking and pin assignment

#### TO-252-2L



XXXX: Wafer Information YYYYY: Quality Code



### Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
PECN50P06 G	-55°C to +150°C	TO-252-2L	2500

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

parameter	symbol	limit	unit	
Drain-source voltage	$V_{DS}$	-60	V	
Gate-source voltage	$V_{GS}$	±20	V	
Continuous Drain Current	$I_D$	TC=25°C	-50	A
		TC=125°C	-25	
Pulsed Drain Current	$I_{DP}$	-200	A	
Avalanche Current	$I_{AS}$	-50	A	
Avalanche energy( L=1mH) <sup>(note1)</sup>	$E_{AS}$	600	mJ	
Maximum power dissipation	$P_D$	TC=25°C	85	W
		TC=100°C	44	
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>Static Characteristics</b>						
Drain-source breakdown voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-60	-	-	V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS}=-60V, V_{GS}=0V$	-	-	-1	$\mu A$
		$T_J=85^\circ C$	-	-	-30	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	$\pm 100$	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.6	-2.5	V
Drain-source on-state resistance <sup>1</sup>	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-30A$	-	22	27	m $\Omega$
		$V_{GS}=-4.5V, I_D=-25A$	-	27	35	
Forward Transconductance	$g_{FS}$	$V_{DS}=-10V, I_D=-20A$	-	25	-	S
<b>Diode Characteristics</b>						
Diode Forward Voltage <sup>1</sup>	$V_{SD}$	$I_{SD}=-20A, V_{GS}=0V$	-	-0.9	-1.2	V
Diode Continuous Forward Current	$I_S$		-	-	-50	A
Reverse Recovery Time	$t_{rr}$	$I_F=-20A,$ $dI/dt=-100A/\mu s$	-	48	-	ns
Reverse Recovery Charge	$Q_{rr}$		-	57	-	nC
<b>Dynamic Characteristics<sup>2</sup></b>						
Gate Resistance	$R_G$	$V_{GS}=0V, V_{DS}=0V, f=1MHz$	-	3	-	$\Omega$
Input capacitance	$C_{ISS}$	$V_{GS}=0V, V_{DS}=-30V$ $f=1.0MHz$	-	2900	-	pF
Output capacitance	$C_{OSS}$		-	160	-	
Reverse transfer capacitance	$C_{RSS}$		-	124	-	
Turn-on delay time	$t_{D(ON)}$	$V_{GS}=-10V, V_{DD}=-30V,$ $R_L=1.5\Omega, R_G=3\Omega$	-	14	-	ns
Turn-on Rise time	$t_r$		-	16	-	
Turn-off delay time	$t_{D(OFF)}$		-	38	-	
Turn-off Fall time	$t_f$		-	45	-	
Total gate charge	$Q_g$	$V_{GS}=-10V, I_D=-60A$ $V_{DS}=-30V$	-	52	-	nC
Gate-source charge	$Q_{gs}$		-	8.3	-	
Gate-drain charge	$Q_{gd}$		-	11.1	-	

Note: 1: Pulse test; pulse width  $\leq 300ns$ , duty cycle  $\leq 2\%$ .

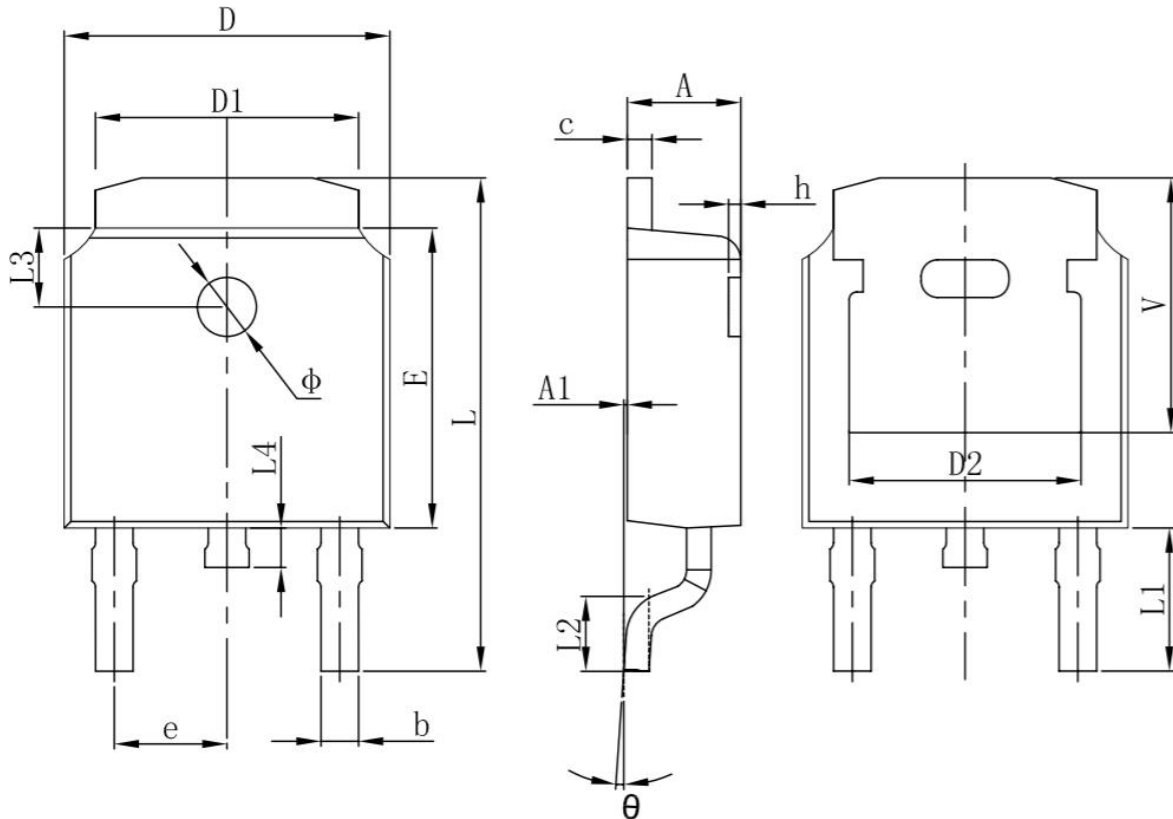
2: Guaranteed by design, not subject to production testing.

## Thermal Characteristics

Parameter	Symbol	Typical	Unit
Thermal Resistance-Junction to Case	$R_{\theta JC}$	1.7	$^\circ C/W$
Thermal Resistance junction-to ambient	$R_{\theta JA}$	62.5	

## Package Information

- TO-252-2L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.250 REF.		0.207 REF.	