

## 100V P-Channel Enhancement Mode MOSFET

### Description

The PECN16P10G 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

- ◆  $V_{DS} = -100V$   $I_D = -16A$   
 $R_{DS(ON)}(Typ.) = 150m\Omega$  @  $V_{GS} = -10V$   
 $R_{DS(ON)}(Typ.) = 200m\Omega$  @  $V_{GS} = -4.5V$   
 High power and current handling capability
- ◆ Lead free product is acquired
- ◆ Surface mount package

### Application

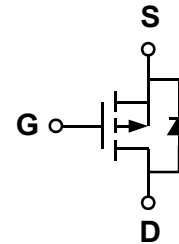
- ◆ Load switch

### Package

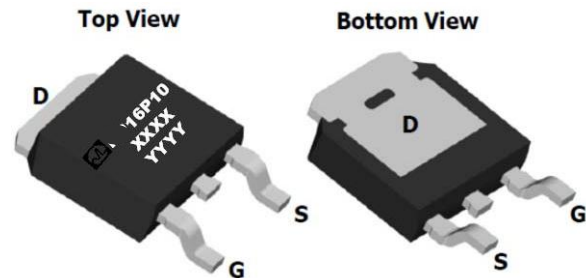
- ◆ TO-252-2L

*100% UIS TESTED!*  
*100%  $\Delta V_{ds}$  TESTED!*

### Schematic diagram



### Marking and pin assignment



PECN16P10—NP16P10G

XXXX—Date Code  
 YYYY—Quality Code.



### Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
PECN16P10 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	$V_{DS}$	-100	V
Gate-source voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	TC=25°C	-16
		TC=100°C	-9.8
Pulsed Drain Current	$I_{DP}$	-64	A
Avalanche Current	$I_{AS}$	-16	A
Avalanche energy( L=0.5mH)	EAS	345	mJ
Maximum power dissipation	$P_D$	TC=25°C	150
		TC=100°C	100
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	$BV_{DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-100	-	-	V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS}=-100V, V_{GS}=0V$	-	-	-25	$\mu A$
		$V_{DS}=-80V, V_{GS}=0V, T_J=150^\circ C$	-	-	-100	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	$\pm 100$	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.5	-2.6	-3.2	V
Drain-source on-state resistance <sup>1</sup>	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-16A$	-	150	180	m $\Omega$
		$V_{GS}=-4.5V, I_D=-10A$	-	200	250	
On Status Drain Current	$I_{D(ON)}$	$V_{DS}=-50V, V_{GS}=-10V$	-16	-	-	A
<b>Diode Characteristics</b>						
Diode Forward Voltage <sup>1</sup>	$V_{SD}$	$I_{SD}=-16A, V_{GS}=0V$	-	-0.8	-1.3	V
Diode Continuous Forward Current	$I_S$		-	-16	-	A
Reverse Recovery Time	$t_{rr}$	$I_F=-16A,$ $di/dt=-100A/us$	-	35	-	ns
Reverse Recovery Charge	$Q_{rr}$		-	46	-	nC
<b>Dynamic Characteristics<sup>2</sup></b>						
Gate Resistance	$R_G$	$V_{GS}=0V, V_{DS}=0V, f=1MHz$	-	0.65	-	$\Omega$
Input capacitance	$C_{ISS}$	$V_{GS}=0V, V_{DS}=-25V$ $f=1.0MHz$	-	1180	-	pF
Output capacitance	$C_{OSS}$		-	250	-	
Reverse transfer capacitance	$C_{RSS}$		-	75	-	
Turn-on delay time	$t_{D(ON)}$		-	11	-	
Turn-on Rise time	$t_r$	$V_{GS}=-10V, V_{DD}=-50V,$ $R_D=2.4\Omega, I_D=-16A, R_G=9.1\Omega$	-	25	-	
Turn-off delay time	$t_{D(OFF)}$		-	56	-	
Turn-off Fall time	$t_f$		-	36	-	
Total gate charge	$Q_g$		$V_{GS}=-10V, I_D=-16A$ $V_{DS}=-80V$	-	37	-
Gate-source charge	$Q_{gs}$	-		5	-	
Gate-drain charge	$Q_{gd}$	-		15	-	

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	

Figure A: Gate Charge Test Circuit & Waveforms

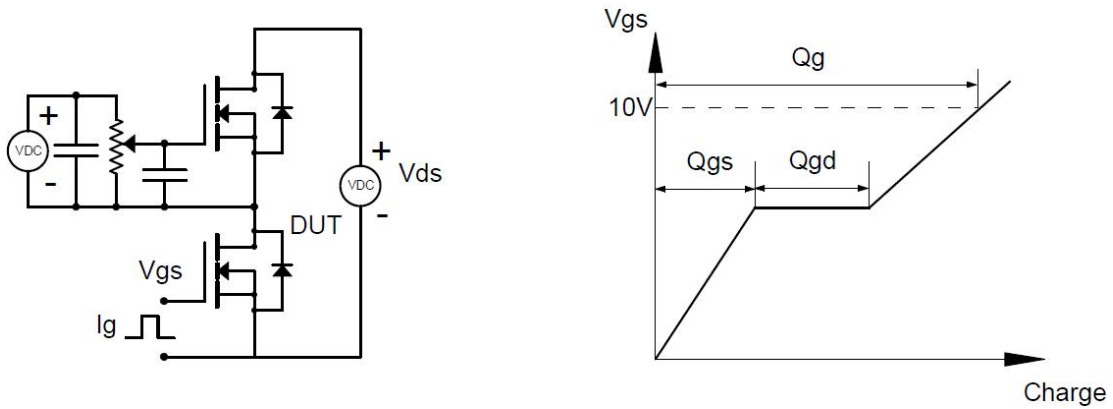


Figure B: Resistive Switching Test Circuit & Waveforms

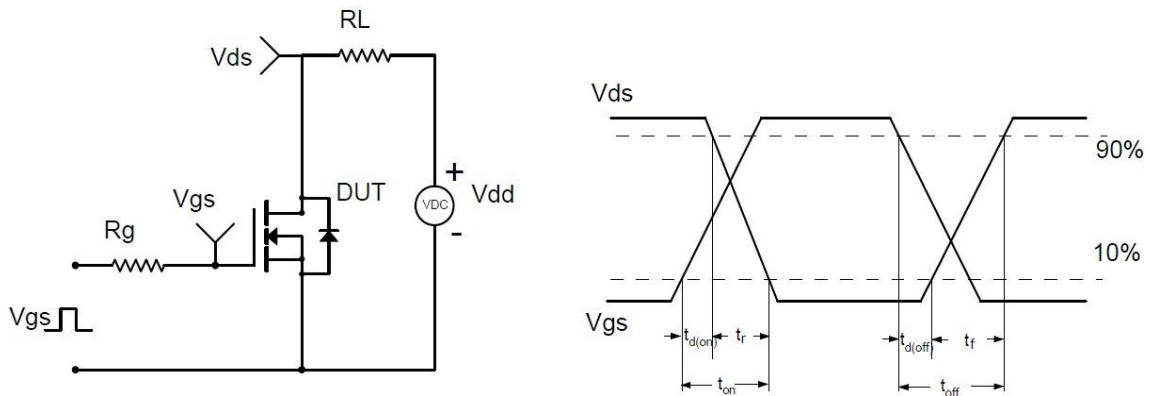


Figure C: Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

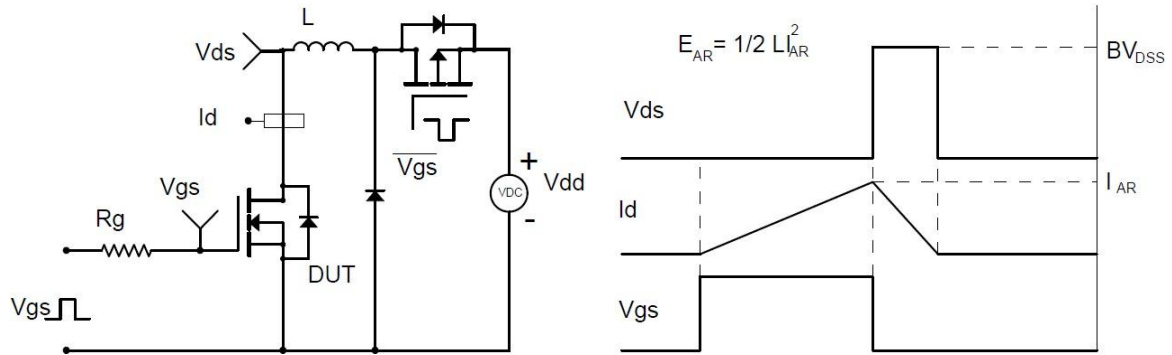
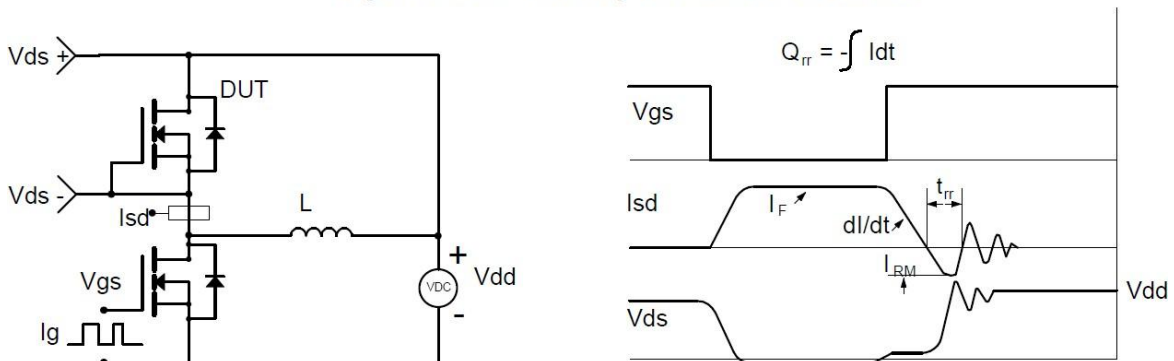
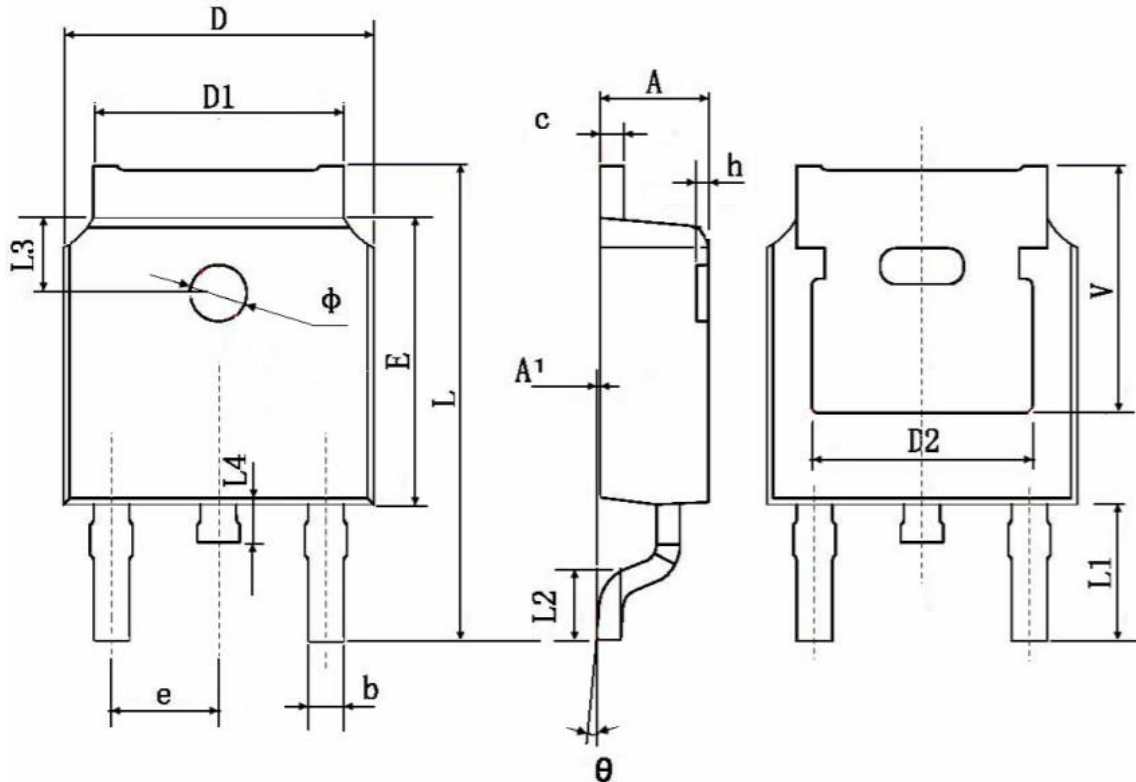


Figure D: Diode Recovery Test Circuit & Waveforms



## 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	0.660	0.860	0.026	0.034
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 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
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	5.350 TYP.		0.211 TYP.	