

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

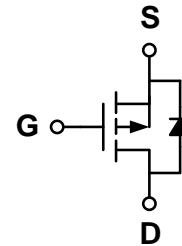
- ◆ Load switch

Package

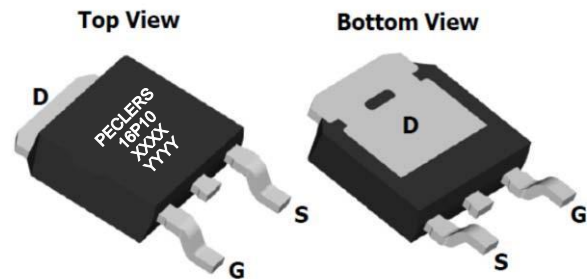
- ◆ TO-252-2L

100% UIS TESTED!
100% ΔV_{ds} TESTED!

Schematic diagram



Marking and pin assignment



PECN16P10—PECN16P10G
 XXXX—Date Code
 YYYY—Quality Code.



Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
PECN16P10G	-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}	± 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	IAS	-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
Static Characteristics						
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	μA
		$V_{DS}=-80V, V_{GS}=0V, T_J=150^\circ C$	-	-	-100	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 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 ¹	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-16A$	-	150	180	m Ω
		$V_{GS}=-4.5V, I_D=-10A$	-	200	250	
On Status Drain Current	$I_{D(ON)}$	$V_{DS}=-50V, V_{GS}=-10V$	-16	-	-	A
Diode Characteristics						
Diode Forward Voltage ¹	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
Dynamic Characteristics²						
Gate Resistance	R_G	$V_{GS}=0V, V_{DS}=0V, f=1MHz$	-	0.65	-	Ω
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	$t_{D(ON)}$	$V_{GS}=-10V, V_{DD}=-50V,$ $R_D=2.4\Omega, I_D=-16A, R_G=9.1\Omega$	-	11	-	ns
Turn-on Rise time	t_r		-	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	-	nC
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

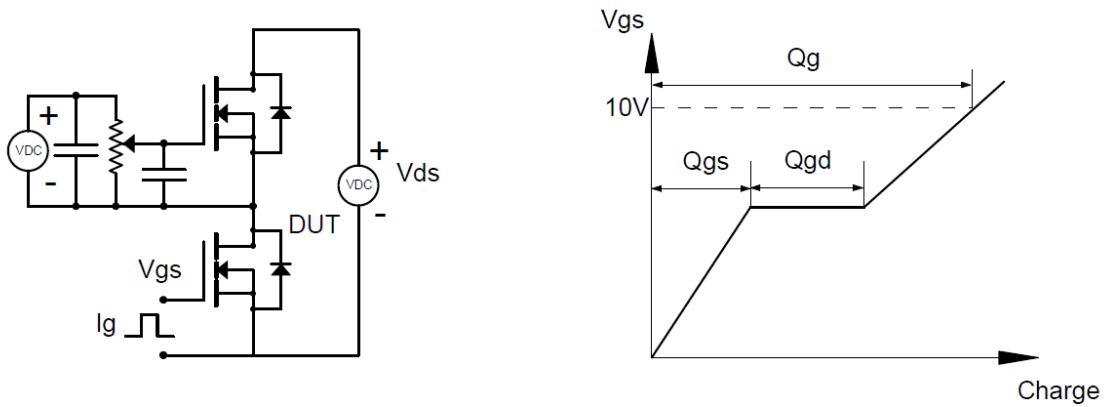


Figure B: Resistive Switching Test Circuit & Waveforms

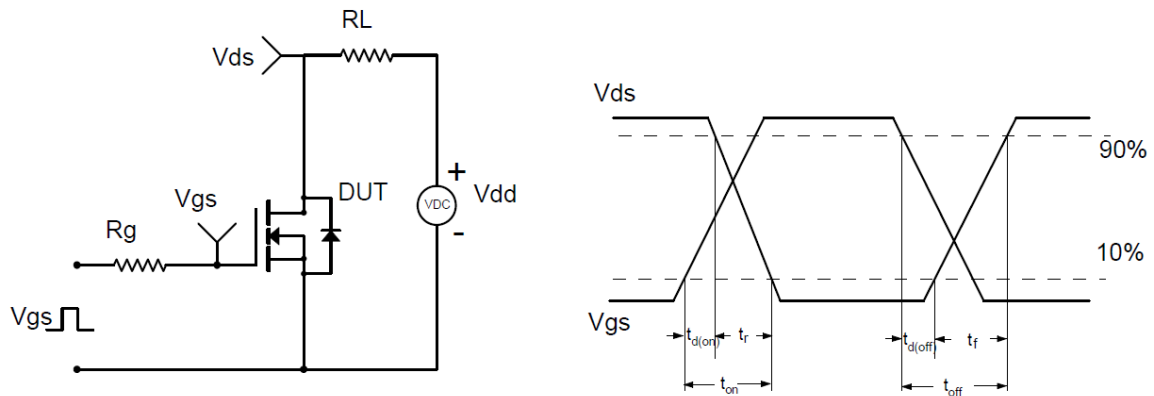


Figure C: Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

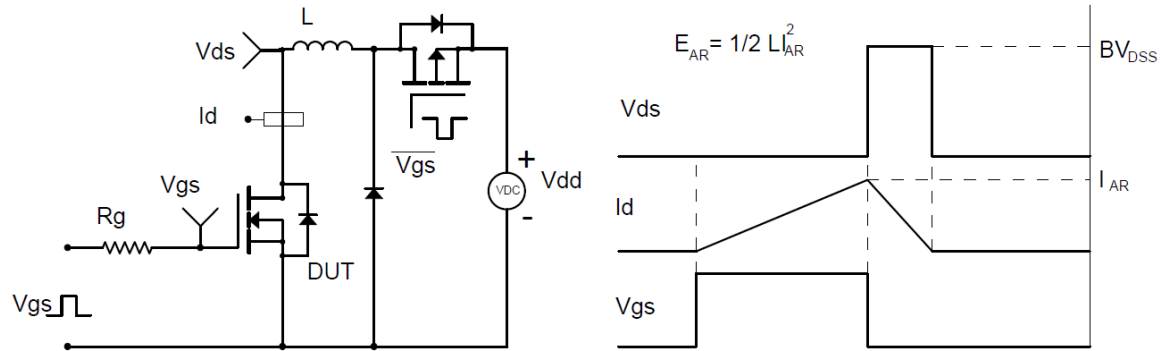
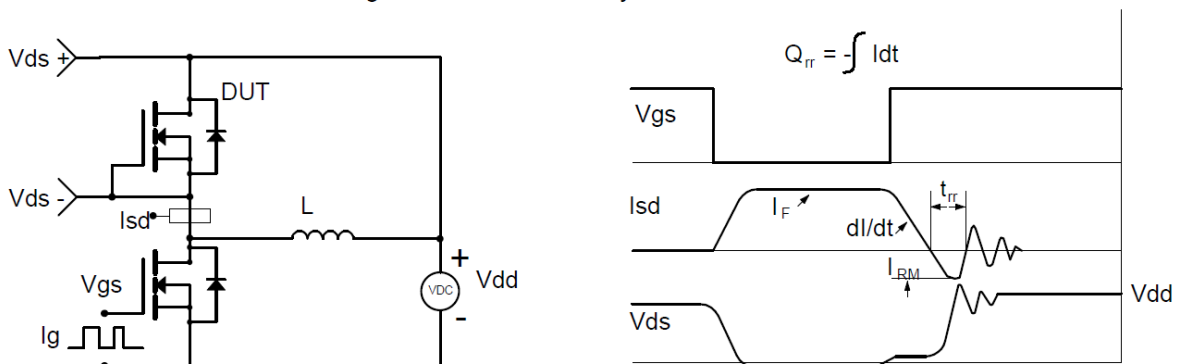
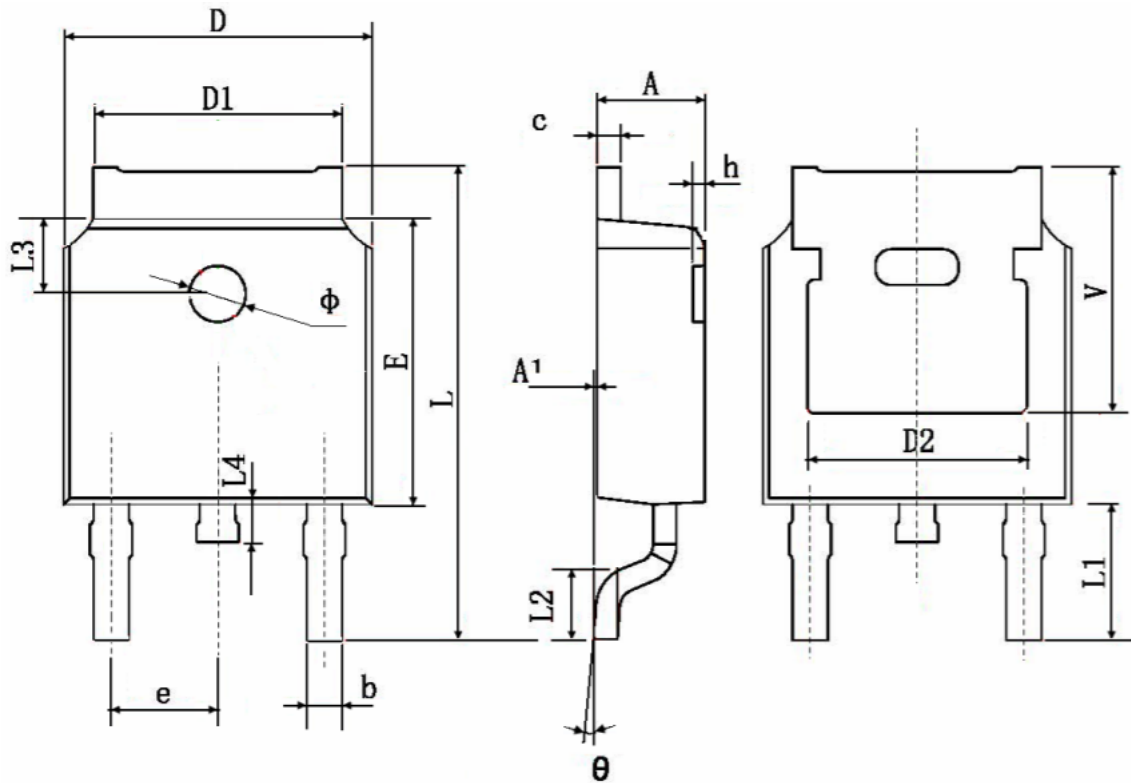


Figure D: Diode Recovery Test Circuit & Waveforms



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.	