60V N-Channel Enhancement Mode MOSFET

Description

The PECN50N06AG 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.)=9.5mΩ @V_{GS}=10V
  $R_{DS(ON)}$(Typ.)=12.5mΩ @V_{GS}=4.5V
  High power and current handing capability
- Lead free product is acquired
- Surface mount package

Application

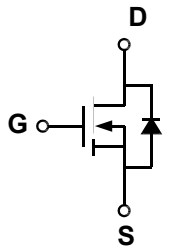
- Load switch

Package

- TO-252-2L

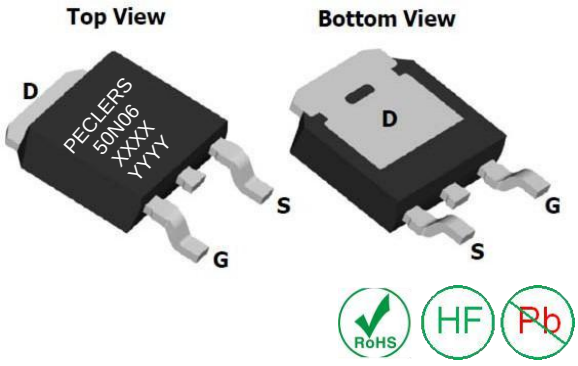
100% UIS TESTED!
100% ΔVds TESTED!

Schematic diagram



Marking and pin assignment

TO-252-2L



RoHS HF Pb

Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
PECN50N06AG	-55°C to +150°C	TO-252-2L	2500

Absolute Maximum Ratings (TA=25℃ unless otherwise noted)

parameter		symbol	limit	unit
Drain-source voltage		V_{DS}	60	V
Gate-source voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	50	A
	T_C=100°C		35	
Pulsed Drain Current (note1)		I_{DP}	200	A
Avalanche Current (note5)		I_{AS}	33	A
Single pulse avalanche energy (note5)		E_{AS}	110	mJ
Maximum power dissipation	TC=25°C	P_D	85	W
	TC=100°C		44	
Operating junction Temperature range		T_J	-55—150	℃

Electrical Characteristics (TA=25℃ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	60	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=60V, V_{GS}=0V	-	-	1	μA
		T_J=85°C	-	-	5	
Gate Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	1.0	1.5	2.2	V
Drain-source on-state resistance[1]	$R_{DS(ON)}$	V_{GS}=10V, I_D=30A	-	9.5	14	mΩ
		V_{GS}=4.5V, I_D=20A	-	12.5	18	
Forward Transconductance	g_{FS}	V_{DS}=5V, I_D=30A	30	-	-	S
Diode Characteristics						
Diode Forward Voltage(note 3)	V_{SD}	I_{SD}=30A,VGS=0V	-	0.89	1.2	V
Diode Forward Current (note 2)	I_S		-	50	-	A
Reverse Recovery Time	t_{rr}	I_F=20A, d_I/d_t=100A/us	-	28	-	ns
Reverse Recovery Charge	Q_{rr}		-	40	-	nC
Dynamic Characteristics (note 4)						
Gate Resistance	R_G	V_{GS}=0V, V_{DS}=0V,f=1MHz	-	1.3	3	Ω
Input capacitance	C_{ISS}	V_{GS}=0V， V_{DS}=20V， f=1.0MHz	-	2800	-	pF
Output capacitance	C_{OSS}		-	151	-	
Reverse transfer capacitance	C_{RSS}		-	129	-	
Turn-on delay time	$t_{D(ON)}$	V_{GS}=10V, V_{DD}=30V, R_L=1Ω, I_D=2A, R_G=3Ω	-	12	-	ns
Turn-on Rise time	tr		-	5.2	-	
Turn-off delay time	$t_{D(OFF)}$		-	38	-	
Turn-off Fall time	tf		-	27	-	
Total gate charge	Q_g	V_{GS}=10V,I_D=20A V_{DS}=20V	-	51		nC
Gate-source charge	Q_{gs}			9.1		
Gate-drain charge	Q_{gd}		-	8.5	-	

Thermal Characteristics

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient (note 6)	t ≤ 10 sec	$R_{\theta JA}$	15	18	℃/W
	Steady State		40	50	
Maximum Junction-to-Case		$R_{\theta JC}$	0.85	1.1	

Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature. 2. Surface Mounted on FR4 Board, t ≤ 10 sec.

3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤2%.

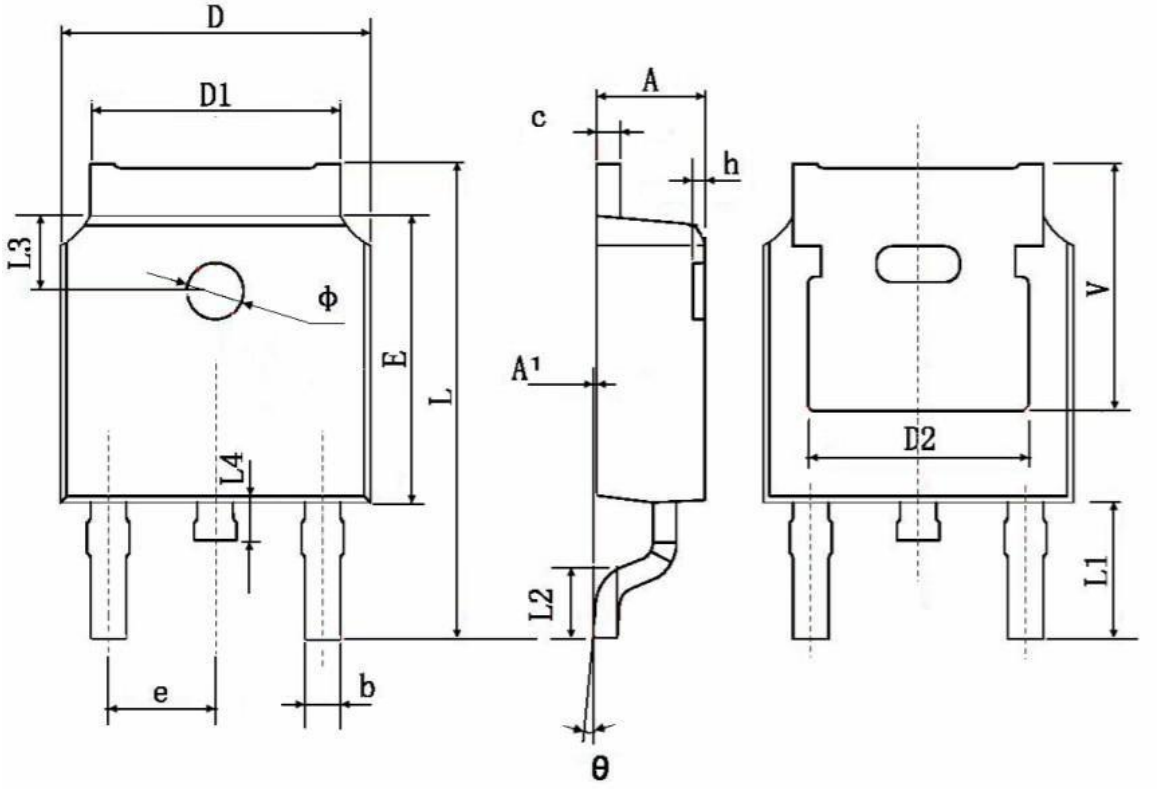
4. Guaranteed by design, not subject to production

5. E_{AS} condition: Tj=25℃,V_{DD}=30V,V_G=10V,L=0.5mH,Rg=25Ω

6 .Package limited.

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.	