

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

- ◆ $V_{DS} = 60V$ $I_D = 50A$
 $R_{DS(ON)}(Typ.) = 9.5m\Omega$ @ $V_{GS} = 10V$
 $R_{DS(ON)}(Typ.) = 12.5m\Omega$ @ $V_{GS} = 4.5V$
 High power and current handling capability
- ◆ Lead free product is acquired
- ◆ Surface mount package

Application

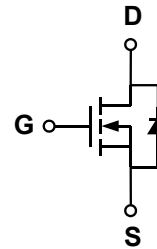
- ◆ Load switch

Package

- ◆ TO-252-2L

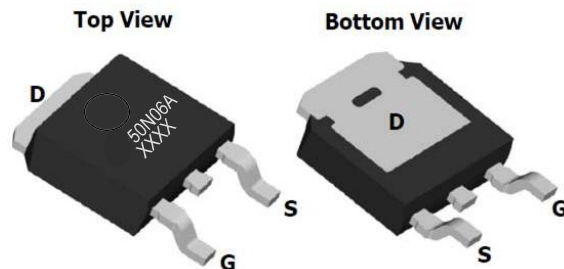
100% UIS TESTED!
100% ΔV_{ds} TESTED!

Schematic diagram



Marking and pin assignment

TO-252-2L



Note: XXXX—
Date Code



Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
PECN50N06A G-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	$T_C = 25^\circ C$	50
		$T_C = 100^\circ C$	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	P_D	$T_C = 25^\circ C$	85
		$T_C = 100^\circ C$	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
Static Characteristics						
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	μA
		$T_J=85^\circ C$	-	-	5	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.5	2.2	V
Drain-source on-state resistance ¹	$R_{DS(ON)}$	$V_{GS}=10V, I_D=30A$	-	9.5	14	m Ω
		$V_{GS}=4.5V, I_D=20A$	-	12.5	18	
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=30A$	30	-	-	S
Diode Characteristics						
Diode Forward Voltage ^(note 3)	V_{SD}	$I_{SD}=30A, V_{GS}=0V$	-	0.89	1.2	V
Diode Forward Current ^(note 2)	I_S		-	50	-	A
Reverse Recovery Time	t_{rr}	$I_F=20A,$	-	28	-	ns
Reverse Recovery Charge	Q_{rr}	$dI/dt=100A/\mu s$	-	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	$t_{D(ON)}$	$V_{GS}=10V, V_{DD}=30V,$ $R_L=1\Omega, I_D=2A, R_G=3\Omega$	-	12	-	ns
Turn-on Rise time	t_r		-	5.2	-	
Turn-off delay time	$t_{D(OFF)}$		-	38	-	
Turn-off Fall time	t_f		-	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

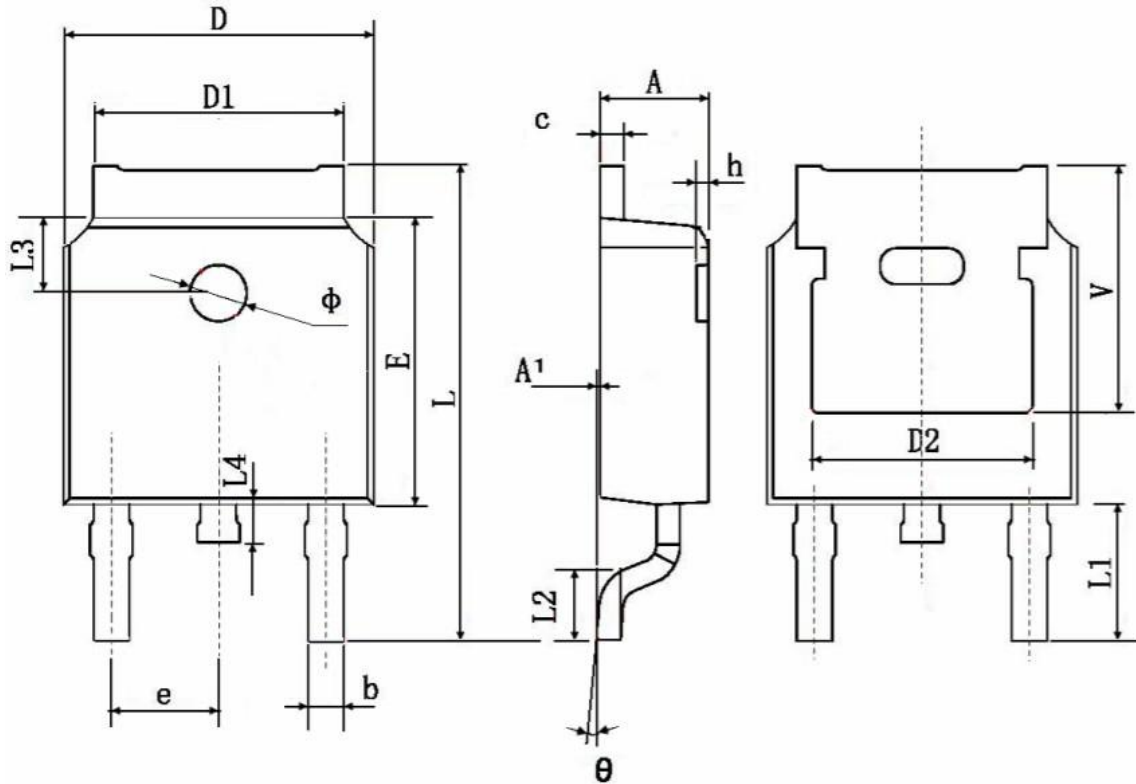
Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^(note 6)	$t \leq 10 \text{ sec}$	15	18	$^\circ C/W$
	Steady State	40	50	
Maximum Junction-to-Case	$R_{\theta JC}$	0.85	1.1	

Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature. 2. Surface Mounted on FR4 Board, $t \leq 10 \text{ sec}$.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production
5. E_{AS} condition: $T_J=25^\circ C, V_{DD}=30V, V_G=10V, L=0.5mH, R_G=25\Omega$
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.	