

30V N-Channel Enhancement Mode MOSFET

Description

The PECN3118DR uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a load switch or in PWM applications.

General Features

- ◆ $V_{DS} = 30V$, $I_D = 18A$
 $R_{DS(ON)}(Typ.) = 10m\Omega$ @ $V_{GS} = 10V$
 $R_{DS(ON)}(Typ.) = 13m\Omega$ @ $V_{GS} = 4.5V$
- ◆ High power and current handling capability
- ◆ Lead free product is acquired
- ◆ Surface mount package

Application

- ◆ PWM applications
- ◆ Load switch

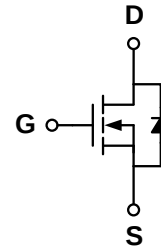
Package

- ◆ DFN2*2-6L-B

100% UIS TESTED!

100% ΔV_{ds} TESTED!

Schematic diagram

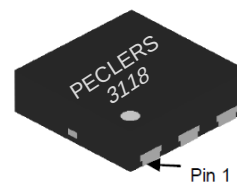


Marking and pin assignment

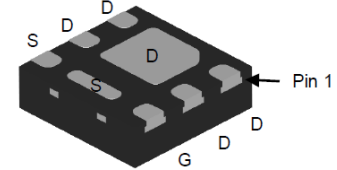
DFN2*2-6L-B

(Thickness 0.55mm)

Top View



Bottom View



Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
PECN3118DR	-55°C to +150°C	DFN2*2-6L-B	4000

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

parameter		symbol	limit	unit
Drain-source voltage		V_{DS}	30	V
Gate-source voltage		V_{GS}	±20	V
Drain current-continuous	$T_C = 25^\circ C$	I_D	18 ^a	A
	$T_C = 70^\circ C$		18 ^a	
	$T_A = 25^\circ C$		18 ^{a,b,c}	
	$T_A = 70^\circ C$		13 ^{b,c}	
Drain-source Diode forward current	$T_C = 25^\circ C$	I_S	18 ^a	A
	$T_A = 25^\circ C$		2.9 ^{b,c}	
Maximum power dissipation		P_D	18	W

	$T_C=70^{\circ}\text{C}$		12	
	$T_A=25^{\circ}\text{C}$		3.5 ^{b,c}	
	$T_A=70^{\circ}\text{C}$		2.2 ^{b,c}	
Operating junction Temperature range		T_j	-55—150	$^{\circ}\text{C}$

Thermal Resistance Ratings

Parameter		Symbol	Typ.	Max.	Unit
Maximum junction-to-ambient ^{b,d}	$t \leq 5 \text{ s}$	R_{thJA}	28	36	$^{\circ}\text{C/W}$
Maximum junction-to-case (drain)	Steady state	R_{thJC}	5.3	6.5	

Notes:

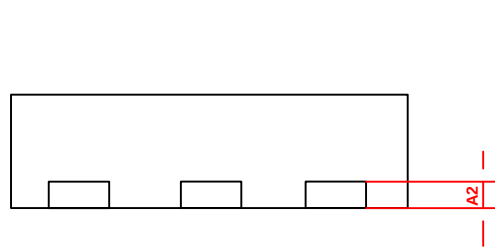
- a. Package limited; b. Surface mounted on 1" x 1" FR4 board; c. $t = 5 \text{ s}$;
d. Maximum under steady state conditions is 80°C/W

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

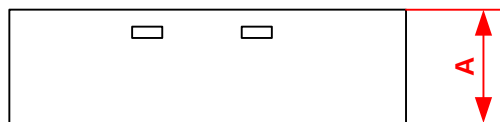
Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	30	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	-	-	1	μA
Gate-body leakage	I _{GSS}	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
ON Characteristics						
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.2	1.8	2.5	V
Drain-source on-state resistance	R _{DS(ON)}	V _{GS} =10V, I _D =18A	-	10	12	mΩ
		V _{GS} =4.5V, I _D =14A	-	13	16	
Forward transconductance	g _{fs}	V _{DS} =5V, I _D =12A	-	45	-	S
Dynamic Characteristics						
Input capacitance	C _{ISS}	V _{DS} =15V ,V _{GS} =0V f=1.0MHz	-	760	-	pF
Output capacitance	C _{OSS}		-	125	-	
Reverse transfer capacitance	C _{RSS}		-	70	-	
Switching Characteristics						
Turn-on delay time	t _{D(ON)}	V _{GS} =10V V _{DD} =15V R _L =1.25Ω R _{GEN} =3Ω	-	10	20	ns
Rise time	t _r		-	11	25	
Turn-off delay time	t _{D(OFF)}		-	35	70	
Fall time	t _f		-	30	60	
Total gate charge	Q _g	V _{DS} =15V I _D =18A V _{GS} =10V	-	14	17	nC
Gate-source charge	Q _{gs}		-	2.4	-	
Gate-drain charge	Q _{gd}		-	3	-	
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode forward voltage	V _{SD}	V _{GS} =0V,I _S =8A	-	-	1.2	V

Package Information

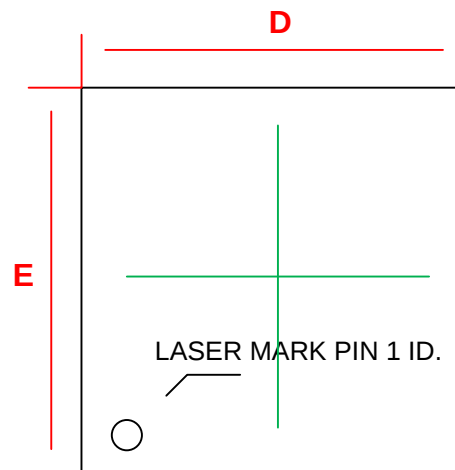
- DFN2*2-6L-B



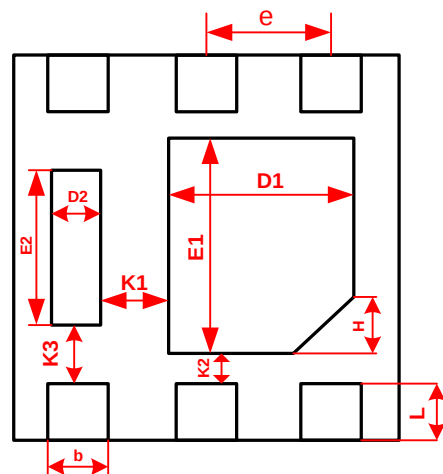
SIDE VIEW



SIDE VIEW



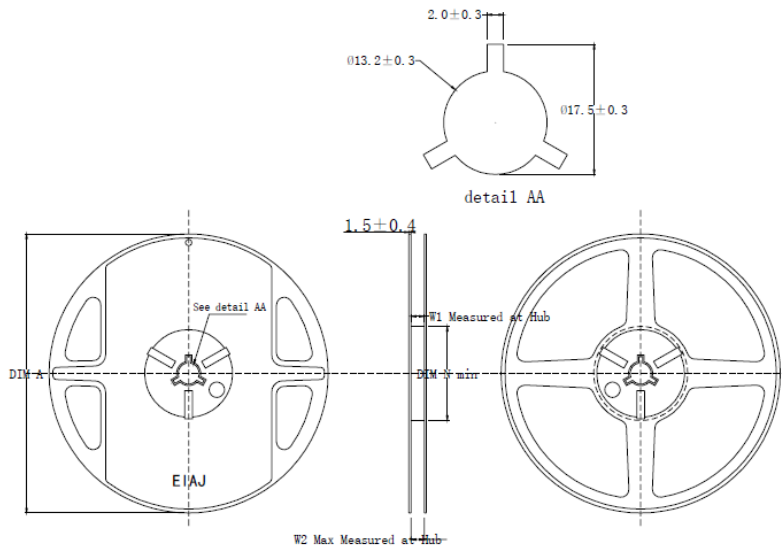
TOP VIEW



BOTTOM VIEW

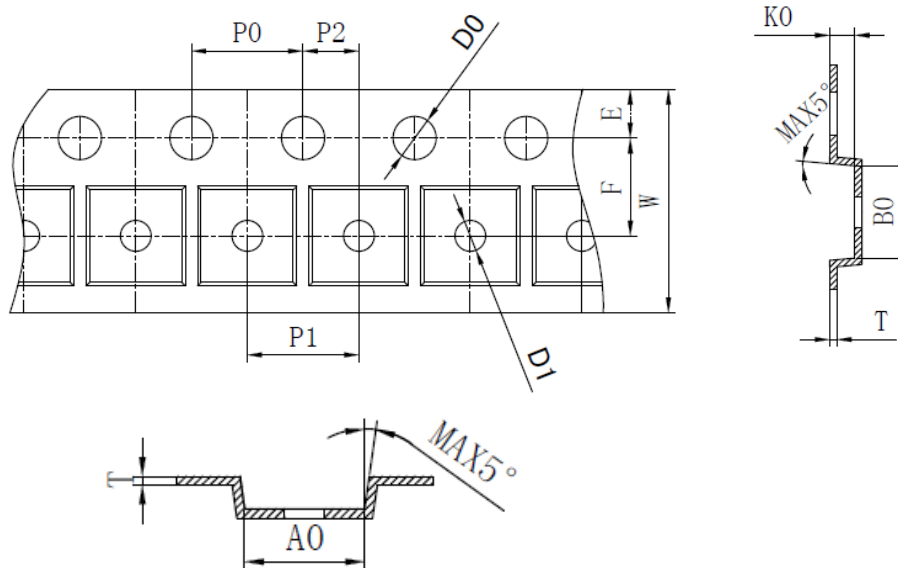
Common Dimension (mm)			
PKG	DFN2020-6L-B		
SYMBOL	MIN.	MON.	MAX.
A	0.527	0.552	0.577
A2		0.127REF	
b	0.25	0.30	0.35
D	1.90	2.00	2.10
E	1.90	2.00	2.10
D1	0.85	0.95	1.05
E1	1.05	1.15	1.25
D2	0.20	0.25	0.30
E2	0.69	0.79	0.89
e	0.55	0.65	0.75
H	0.25	0.30	0.35
K1	0.25MIN		
K2	0.15MIN		
K3	0.20MIN		
L	0.20	0.25	0.30

Tape and Reel



PRODUCT SPECIFICATIONS

TYPE WIDTH	ϕA	ϕN	W1 (Min)	W2 (Max)
8MM	178 ± 2.0	60 ± 1.0	8.4	11.4
12MM	178 ± 2.0	60 ± 1.0	12.4	15.4



SYMBOL	A0	B0	K0	P0	P1	P2
SPEC	2.20 ± 0.05	2.20 ± 0.05	0.75 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05
SYMBOL	T	E	F	D0	D1	W
SPEC	0.20 ± 0.03	1.75 ± 0.10	3.50 ± 0.05	1.55 ± 0.05	$1.00^{+0.10}_{-0}$	$8.00^{+0.20}_{-0.10}$