

## 20V Dual N-Channel Enhancement Mode MOSFET

**Description**

The PECN9926CSR 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**

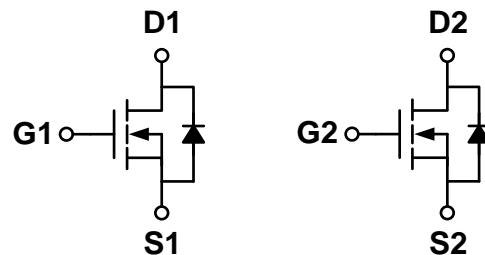
- ◆  $V_{DS} = 20V$ ,  $I_D = 8A$   
 $R_{DS(ON)}(\text{Typ.}) = 12m\Omega$  @  $V_{GS} = 2.5V$   
 $R_{DS(ON)}(\text{Typ.}) = 9.5m\Omega$  @  $V_{GS} = 4.5V$
- ◆ High density cell design for ultra low  $R_{Dson}$
- ◆ Fully characterized avalanche voltage and current

**Application**

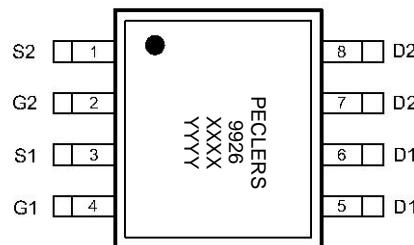
- ◆ Power switching application
- ◆ Hard switched and high frequency circuits
- ◆ Uninterruptible power supply

**Package**

- ◆ SOP-8 **100% UIS TESTED!**  
**100%  $\Delta V_{ds}$  TESTED!**

**Schematic diagram****Marking and pin assignment**

**SOP-8  
(TOP VIEW)**



Note: XXXX is the date code; YYYY is the Quality code.

**Ordering Information**

Part Number	Storage Temperature	Package	Devices Per Reel
PECN9926CSR	-55°C to +150°C	SOP-8	4000

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

parameter	symbol	limit	unit
Drain-source voltage	$V_{DS}$	20	V
Gate-source voltage	$V_{GS}$	$\pm 12$	V
Drain Current-Continuous (Silicon Limited)	$I_D$	8	A
		6	
Pulsed Drain Current (Package Limited)	$I_{DM}$	32	A
Maximum power dissipation	$P_D$	1.25	W
		0.8	
Operating junction Temperature range	$T_j$	-55—150	°C

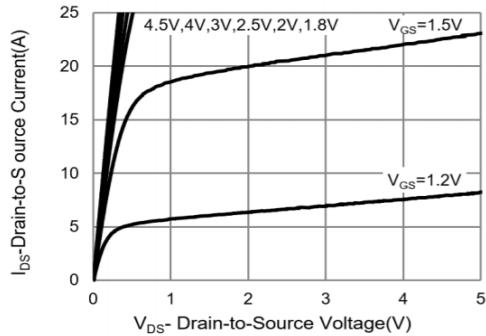
**Electrical Characteristics** (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Drain-source breakdown voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	20	-	-	V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V	-	-	1	μA
Gate-body leakage	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V	-	-	±100	nA
<b>ON Characteristics</b>						
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.5	0.7	1.2	V
Drain-source on-state resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =8A	-	9.5	12	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =6A	-	12	15	
Forward transconductance	g <sub>f</sub>	V <sub>GS</sub> =5V, I <sub>D</sub> =6A	-	10	-	S
<b>Dynamic Characteristics</b>						
Input capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V f=1.0MHz	-	900	-	pF
Output capacitance	C <sub>OSS</sub>		-	162	-	
Reverse transfer capacitance	C <sub>RSS</sub>		-	105	-	
<b>Switching Characteristics</b>						
Turn-on delay time	t <sub>D(ON)</sub>	V <sub>DD</sub> =10V I <sub>D</sub> =8A V <sub>GEN</sub> =4.5V R <sub>GEN</sub> =3ohm	-	4.5	-	ns
Rise time	tr		-	9.2	-	
Turn-off delay time	t <sub>D(OFF)</sub>		-	18.7	-	
Fall time	tf		-	3.3	-	
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =8A V <sub>GS</sub> =4.5V	-	16	-	nC
Gate-source charge	Q <sub>gs</sub>		-	1.8	-	
Gate-drain charge	Q <sub>gd</sub>		-	2.8	-	

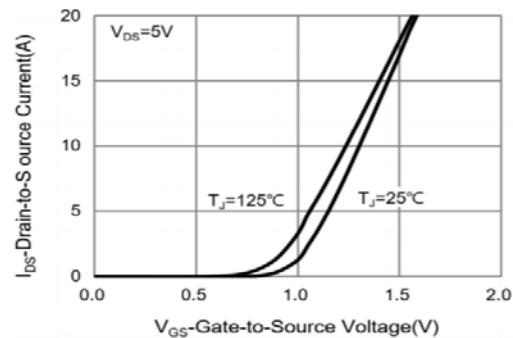
**Thermal Characteristics**

Thermal Resistance junction-to ambient	R <sub>θJA</sub>	100	°C/W
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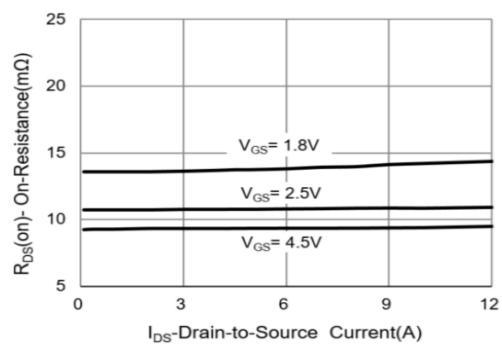
### Typical Performance Characteristics



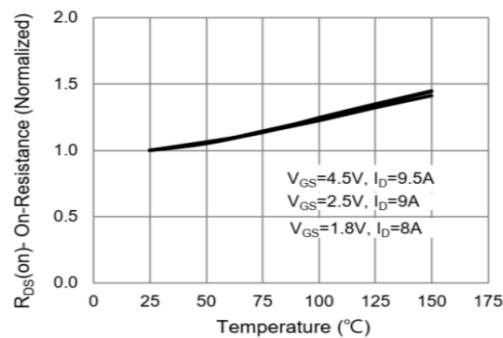
**Fig.1 On-Region Characteristics**



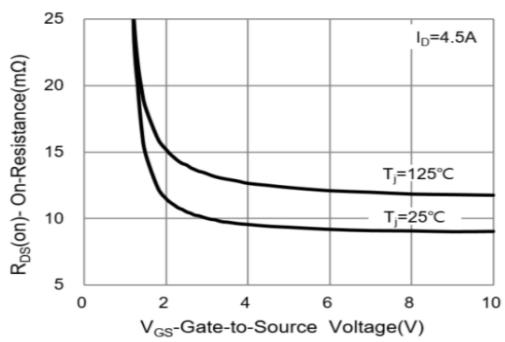
**Fig.2 Transfer Characteristics**



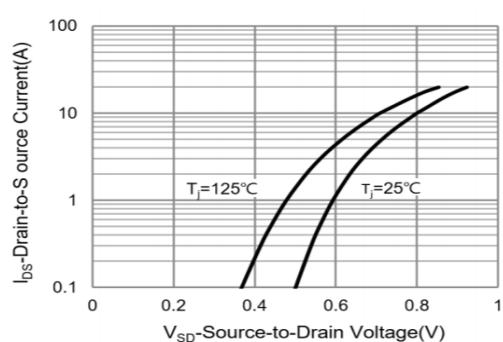
**Fig.3 On-Resistance vs. Drain Current**



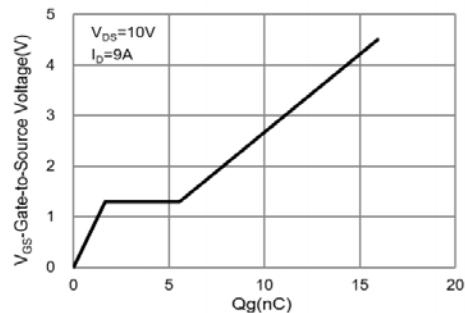
**Fig.4 On-Resistance vs. Junction temperature**



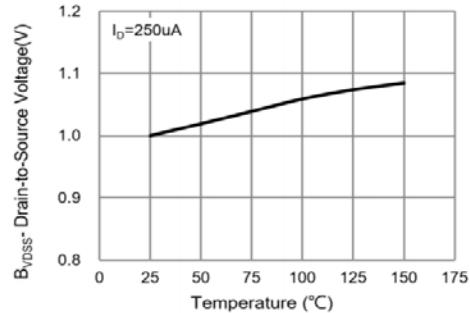
**Fig.5 On-Resistance Variation with  $V_{GS}$**



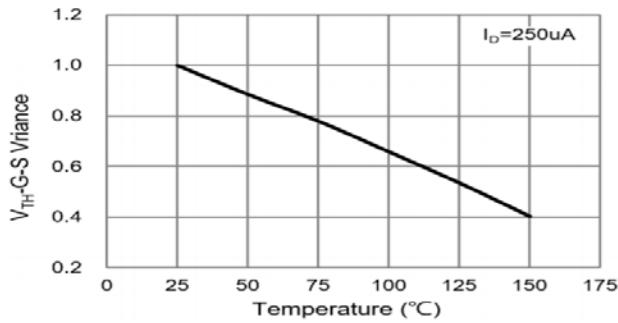
**Fig.6 Body Diode Characteristics**



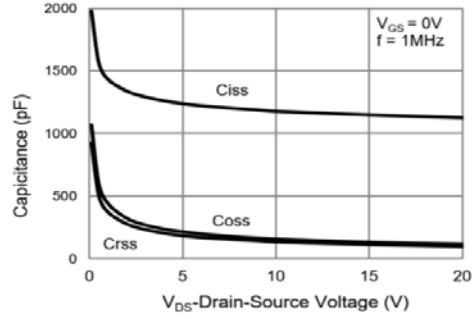
**Fig.7 Gate-Charge Characteristics**



**Fig.8 Breakdown Voltage Variation vs. Temperature**



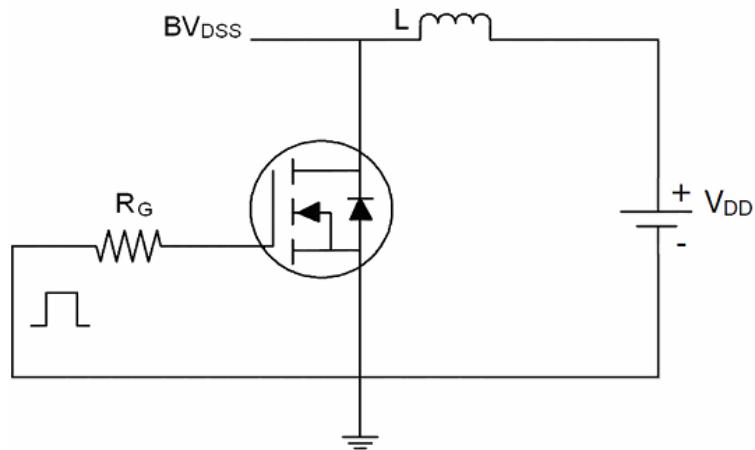
**Fig.9 Threshold Voltage Variation with Temperature**



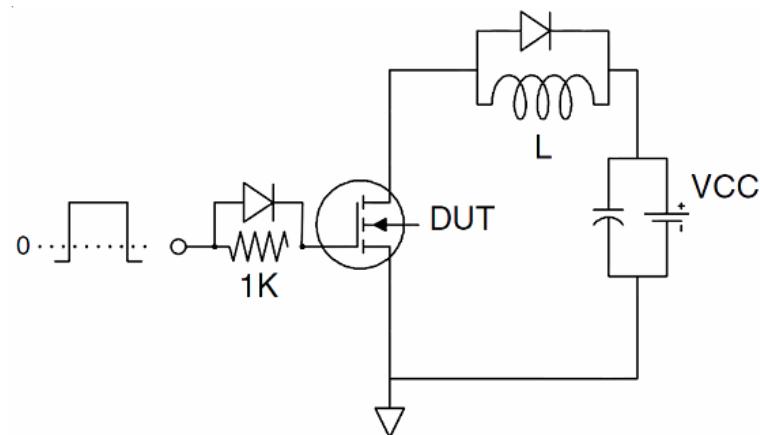
**Fig.10 Capacitance vs. Drain-Source Voltage**

### Test Circuit:

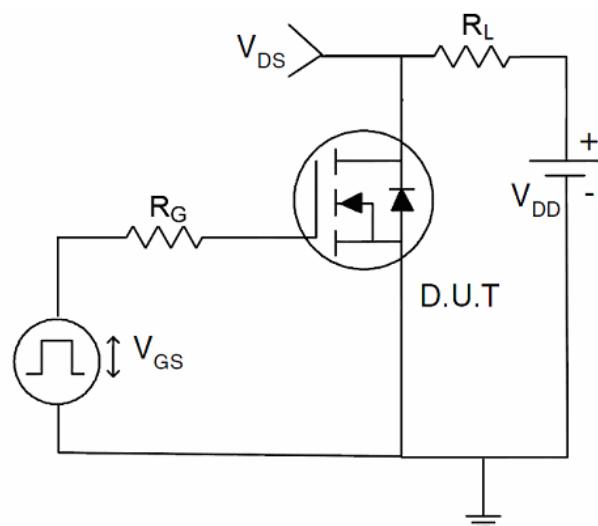
(1)、EAS Test Circuit



(2)、Gate Charge Test Circuit

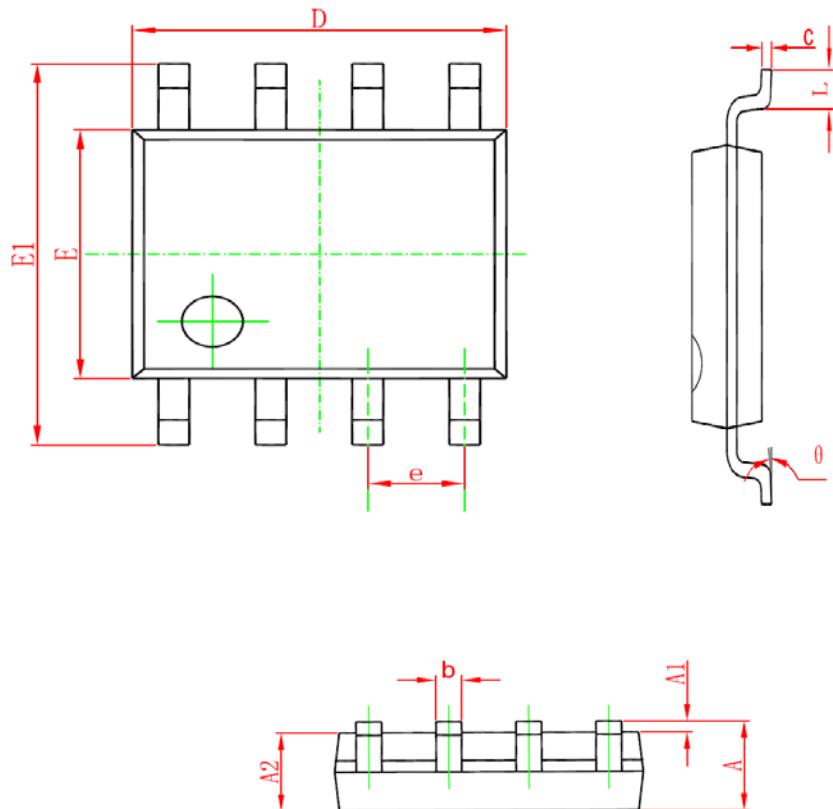


(3)、Switch Time Test Circuit



## Package Information

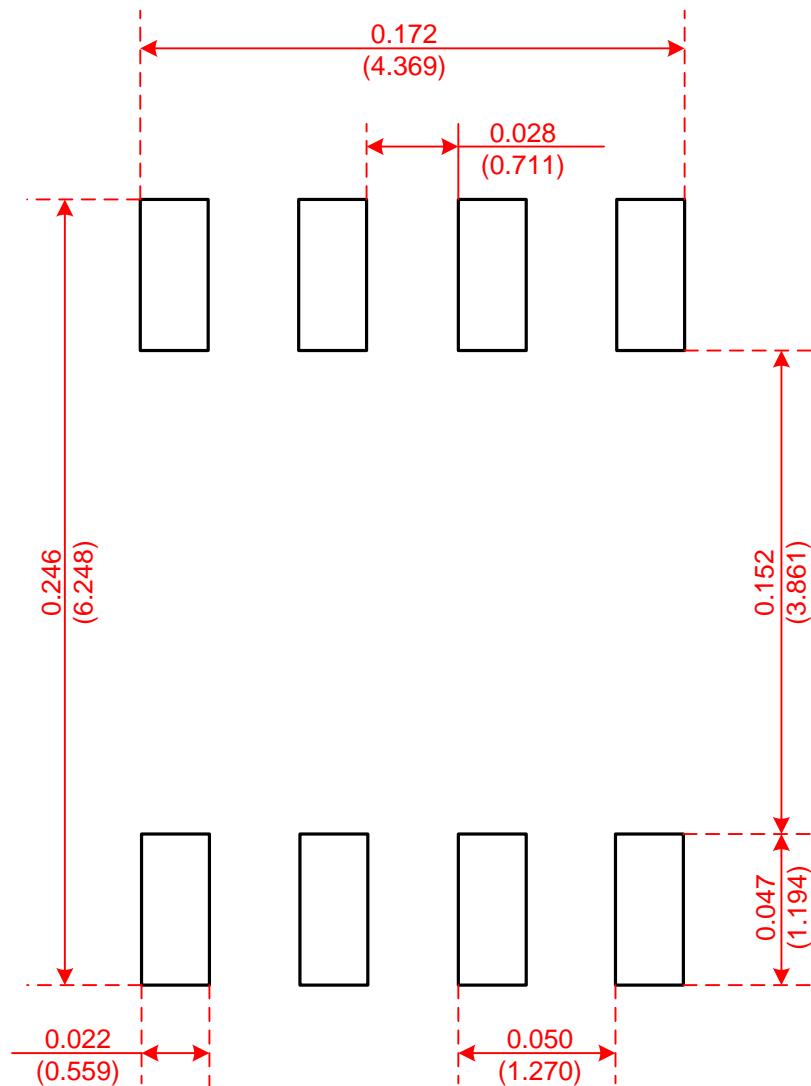
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Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

### Recommended Minimum Pads

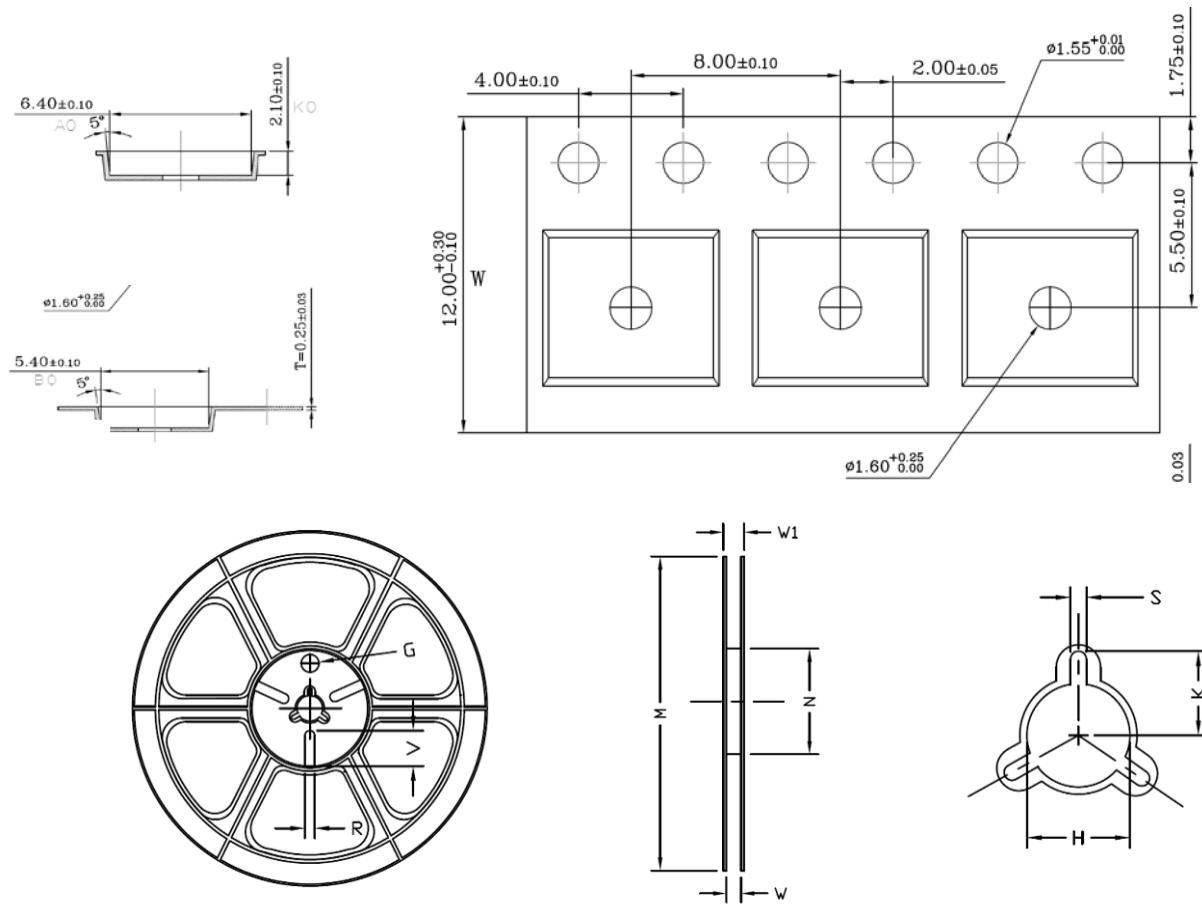
- SOP-8



**Recommended Minimum Pads**  
Dimensions in Inches/(mm)

### Tape and Reel

- SOP-8



Tape Size	Reel Size	M	N	W	W1	H	K	S	G	R	V
12mm	Ø330	Ø330.00 ±0.50	Ø97.00 ±0.30	13.00 ±0.30	17.40 ±1.00	Ø13.00 ±0.5	10.6	2.00 ±0.50	—	—	—

