60V Dual N-Channel Enhancement Mode MOSFET

Description

The PECN4824SR uses advanced trench technology to provide excellent $R_{DS(ON)}$ with low gate charge.

This device is suitable for high side switch in SMPS and general purpose applications.

General Features

- V_{DS} =60V,I_D =8A
  $R_{DS(ON)}$=13.5mΩ (typical) @ V_{GS}=10V
  $R_{DS(ON)}$=15.5mΩ (typical) @ V_{GS}=4.5V
- Excellent gate charge x $R_{DS(ON)}$ product(FOM)
- Very low on-resistance $R_{DS(ON)}$
- 150 °C operating temperature
- Pb-free lead plating

Application

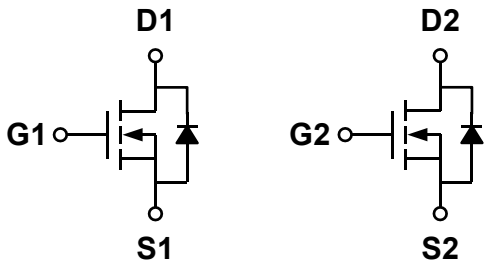
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

- SOP-8

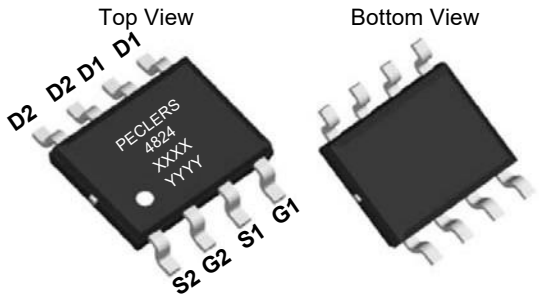
100% UIS TESTED!
100% ΔVds TESTED!

Schematic diagram



Marking and pin assignment

SOP-8



Note：XXXX is the Wafer Lot No., YYYY is the Quality Code

Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
PECN4824SR	-55°C to +150°C	SOP-8	4000

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
Drain Current-Continuous (Silicon Limited)	T_A=25°C	I_D	8	A
	T_A=75°C		6	
Pulsed Drain Current (Package Limited)		I_{DM}	32	A
Single pulse avalanche energy (L=0.5mH)		E_{AS}	150	mJ
Maximum power dissipation	T_A=25°C	P_D	2	W
	T_A=75°C		1.3	
Operating junction Temperature range		Tj	-55—150	℃

Electrical Characteristics (TA=25℃ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF 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
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	1.1	2.0	2.9	V
Drain-source on-state resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=8A	-	13.5	17	mΩ
		V_{GS}=4.5V, I_D=6A	-	15.5	20	
Forward transconductance	gfs	V_{DS}=5V, I_D=8A	18	-	-	S
Dynamic Characteristics						
Input capacitance	C_{ISS}	V_{DS}=30V ,V_{GS}=0V f=1.0MHz	-	2560	-	pF
Output capacitance	C_{OSS}		-	160	-	
Reverse transfer capacitance	C_{RSS}		-	125	-	
Gate resistance	Rg	V_{GS}=0V, V_{DS}=0V, f=1.0MHz	-	3.2	5	Ω
Switching Characteristics						
Turn-on delay time	$t_{D(ON)}$	V_{DS}=30V V_{GS}=10V R_L=1Ω R_{GEN}=3Ω	-	7	-	ns
Rise time	tr		-	5.5	-	
Turn-off delay time	$t_{D(OFF)}$		-	29	-	
Fall time	tf		-	4.5	-	
Total gate charge	Qg	V_{DS}=30V,I_D=6A V_{GS}=10V	-	52.5	-	nC
Gate-source charge	Qgs		-	7.3	-	
Gate-drain charge	Qgd		-	12.0	-	

Thermal Characteristics

Parameter		Symbol	Typ	Max	Unit
Maximum Junction-to-Ambient[A]	≤ 10s	$R_{\theta JA}$	33	40	℃/W
Maximum Junction-to-Ambient[A]	Steady-State		59	75	
Maximum Junction-to-Lead[B]	Steady-State	$R_{\theta JC}$	16	24	

A:The value of R qJA is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with T A=25°C. The value in any given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.

B: The R qJA is the sum of the thermal impedence from junction to lead R qJL and lead to ambient.

Typical Performance Characteristics

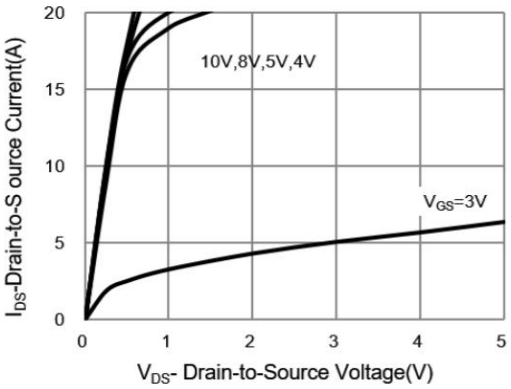


Fig 1: On-Region Characteristics

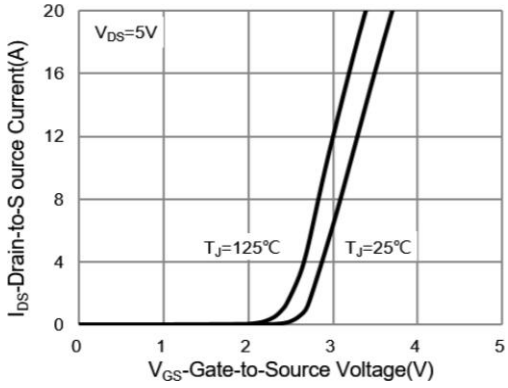


Figure 2: Transfer Characteristics

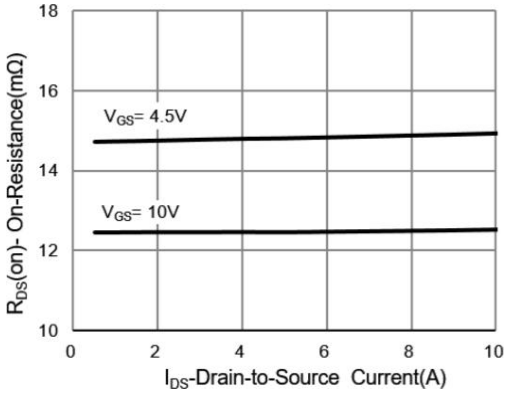


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

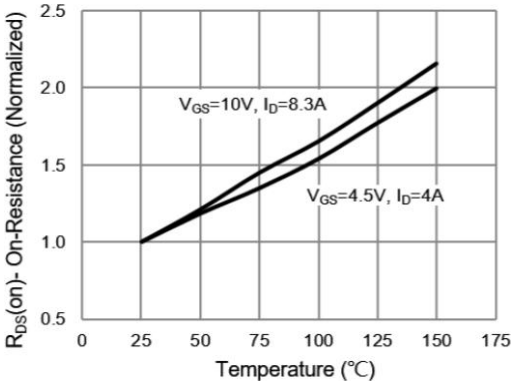


Figure 4: On-Resistance vs. Junction Temperature

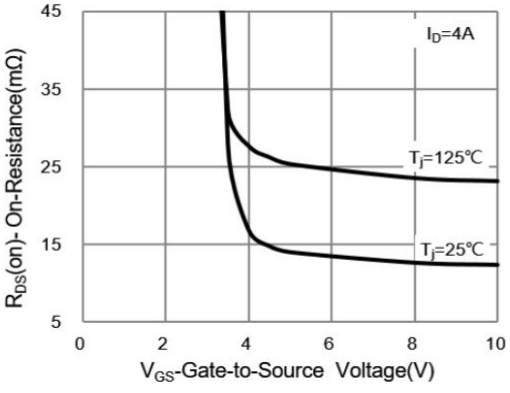


Figure 5: On-Resistance vs. Gate-Source Voltage

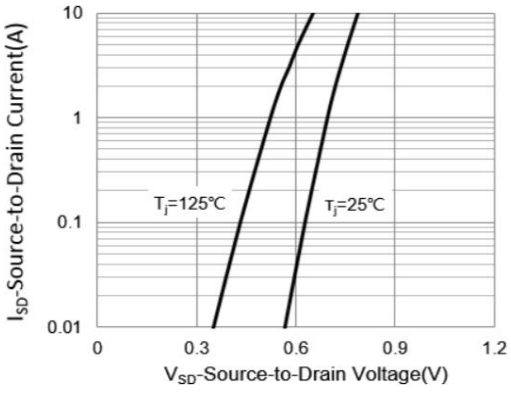
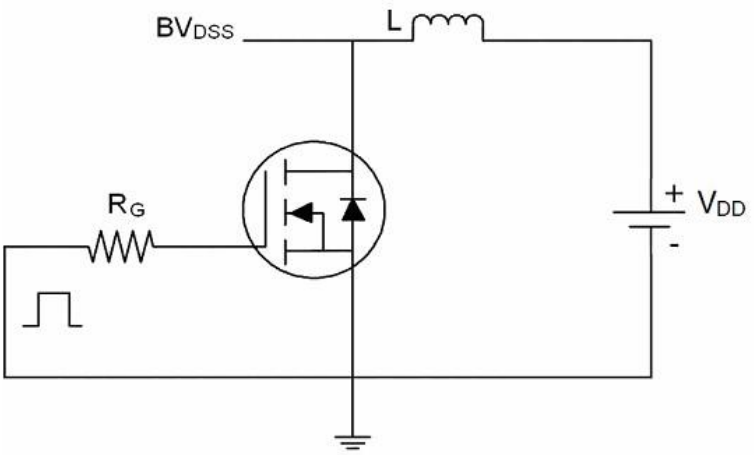


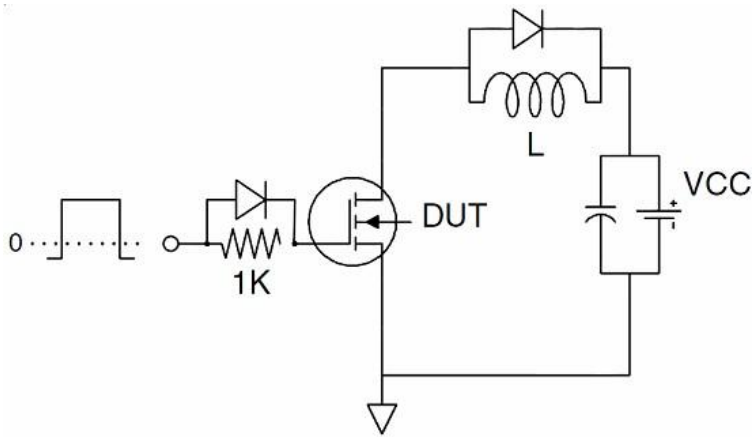
Figure 6: Body-Diode Characteristics

Test Circuit：

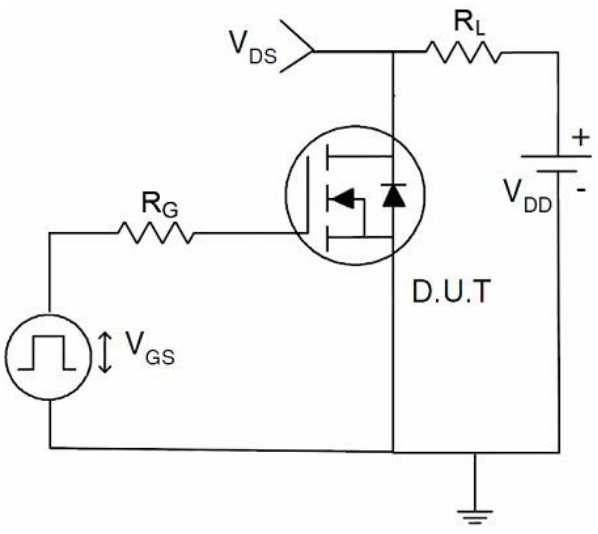
（1）、EAS Test Circuit



（2）、Gate Charge Test Circuit

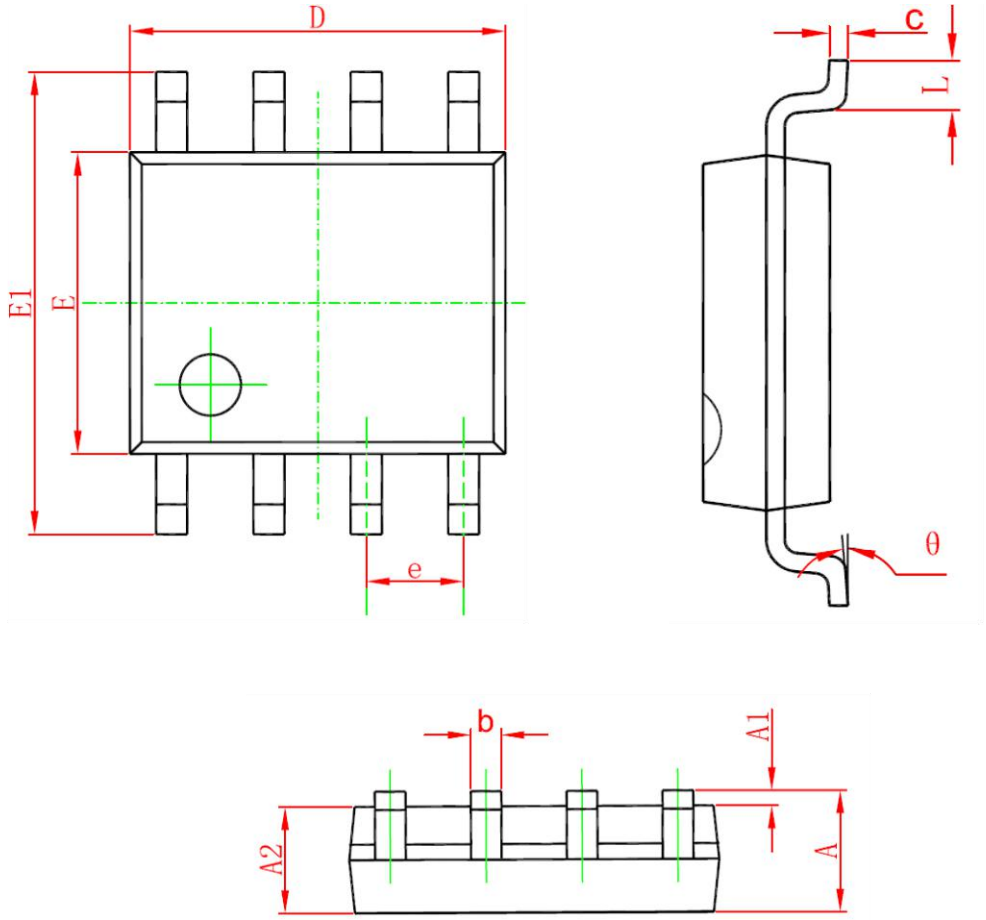


（3）、Switch Time Test Circuit



Package Information

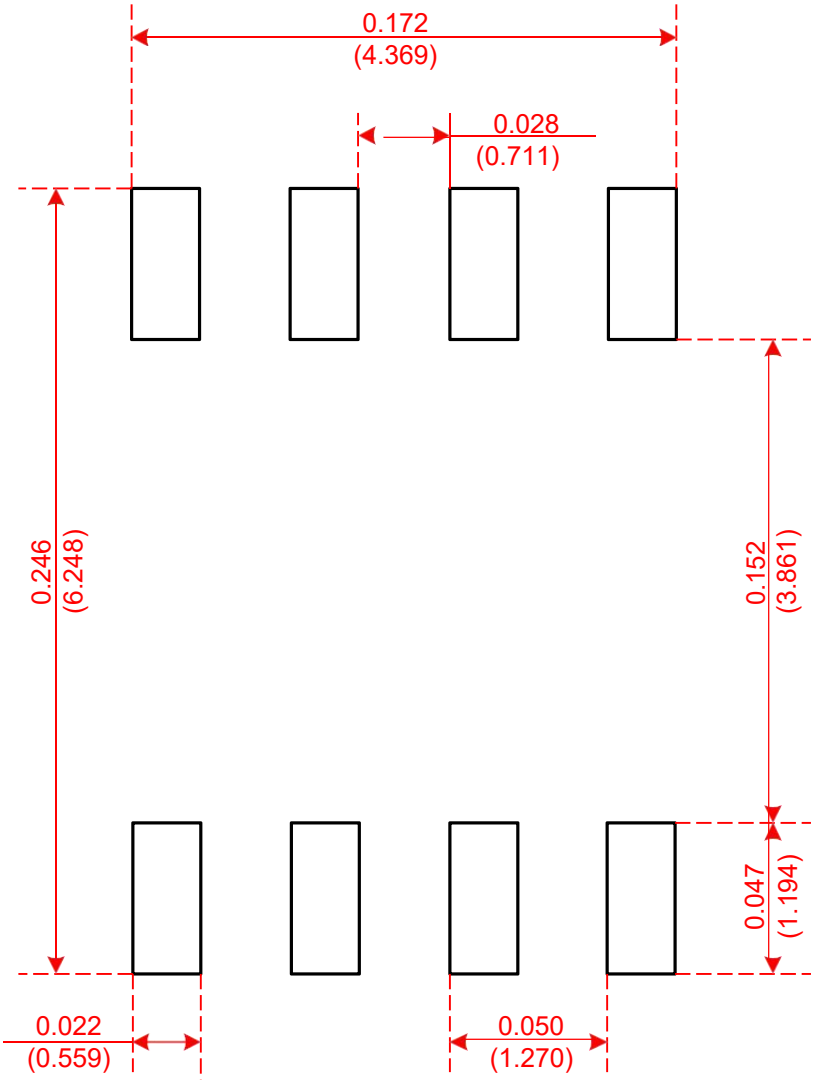
- **SOP-8**



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

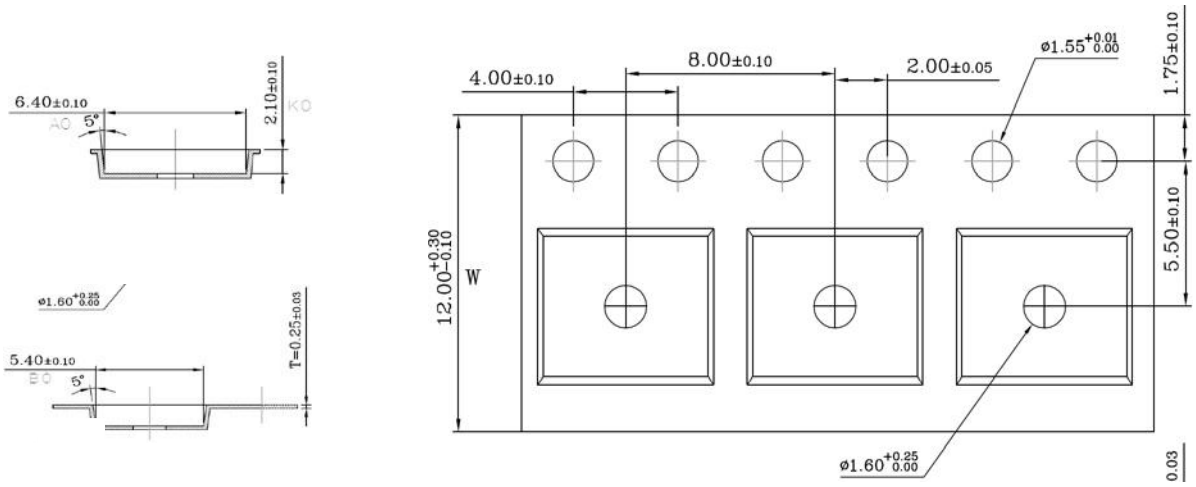
- **SOP-8**

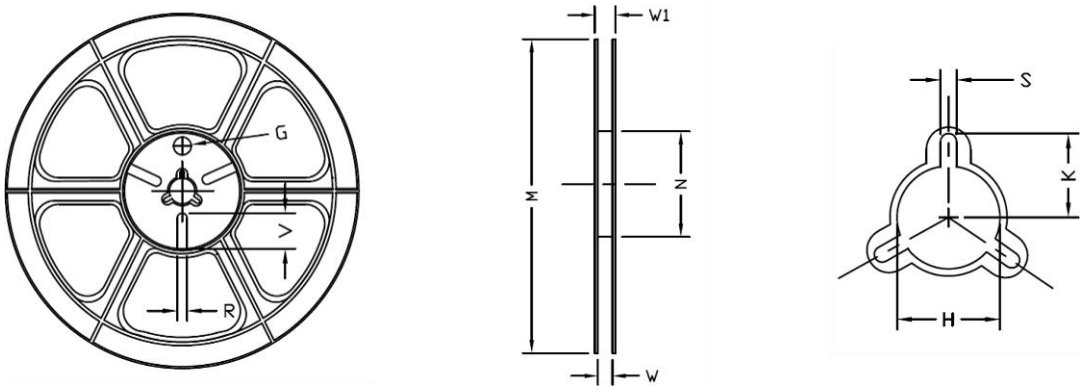


Recommended Minimum Pads
Dimensions in Inches/(mm)

Tape and Reel

- **SOP-8**





Tape Size	Reel Size	M	N	W	W1	H	K	S	G	R	V
12mm	Φ330	Φ330.00 ±0.50	Φ97.00 ±0.30	13.00 ±0.30	17.40 ±1.00	Φ13.00 ±0.5	10.6	2.00 ±0.50	—	—	—

Unit Per Reel:
4000pcs