20V N And P-Channel Enhancement Mode MOSFET

Description

The PECN2623SR uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge . The complementary MOSFETs may be used to form a level shifted high side switch, and for a host of other applications.

General Features

- **N-channel:**
  V_{DS} =20V,ID =6A
  $R_{DS(ON)}$=21mΩ (typical) @ VGS=4.5V
  $R_{DS(ON)}$=27mΩ (typical) @ VGS=2.5V
  P-Channel:
  V_{DS} =-20V,ID =-5.5A
  $R_{DS(ON)}$=38mΩ (typical) @ VGS=-4.5V
  $R_{DS(ON)}$=52mΩ (typical) @ VGS=-2.5V
- Excellent gate charge x $R_{DS(ON)}$ product(FOM)
- Very low on-resistance $R_{DS(ON)}$
- 150 °C operating temperature
- Pb-free lead plating
- 100% UIS tested

Application

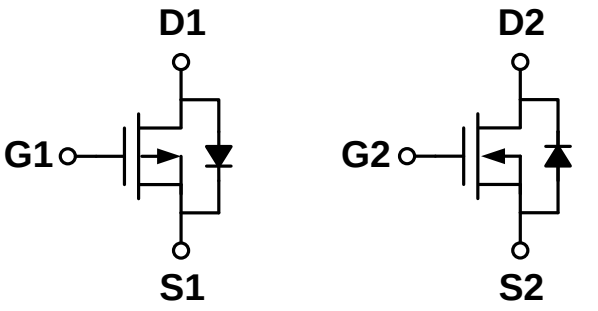
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package

SOP-8

100% UIS TESTED!
100% ΔVds TESTED!

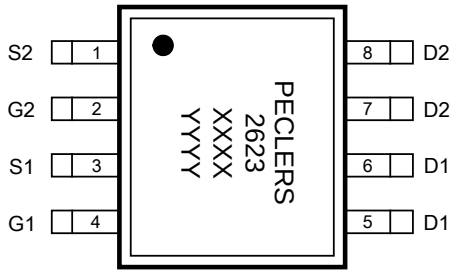
Schematic diagram



p-channel n-channel

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
PECN2623SR	-55°C to +150°C	SOP-8	4000

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

Parameter	Symbol	Limit		Unit
		N	P	
Drain-source voltage	V_{DS}	20	-20	V
Gate-source voltage	V_{GS}	±12	±12	V

Maximum power dissipation		P_D	2.0	2.0	W
Operating junction Temperature range		T_j	-55—150	-55—150	℃
Drain Current-Continuous (Silicon Limited)	T_A=25°C	I_D	6	-5.5	A
	T_A=75°C		4	-4	
Pulsed Drain Current (Package Limited)		I_{DM}	24	-22	A
Power Dissipation [B]	T_A=25°C	P_D	2	2	W
	T_A=75°C		1.3	1.3	
Junction and Storage Temperature Range		T_J, T_{STG}	-55—150		℃

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 $R_{\theta JA}$ is measured with the device mounted on 1 in^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 $R_{\theta JA}$ is the sum of the thermal impedence from junction to lead $R_{\theta JC}$ and lead to ambient.

N-Channel Electrical Characteristics (T_J=25℃ unless otherwise noted)

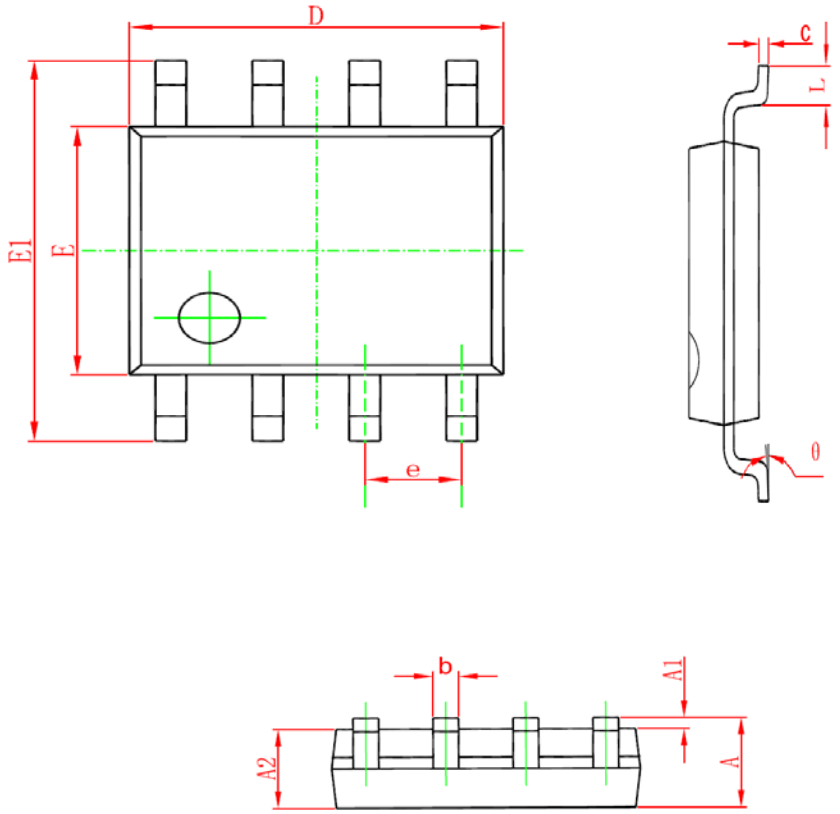
Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	20	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=20V, V_{GS}=0V	-	-	1	μA
Gate-body leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±12V	-	-	±100	nA
ON Characteristics						
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	05	0.65	1.2	V
Drain-source on-state resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=6A	-	21	25	mΩ
		V_{GS}=2.5V, I_D=5A	-	27	32	
Forward transconductance	gfs	V_{DS}=5V, I_D=6A	-	8	-	S
Dynamic Characteristics						
Input capacitance	C_{ISS}	V_{DS}=10V ,V_{GS}=0V f=1.0MHz	-	500	-	pF
Output capacitance	C_{OSS}		-	95	-	
Reverse transfer capacitance	C_{RSS}		-	75	-	
Gate resistance	Rg	V_{GS}=0V, V_{DS}=0V, f=1.0MHz	-	1.7	-	Ω
Switching Characteristics						
Turn-on delay time	$t_{D(ON)}$	V_{DS}=10V V_{GS}=4.5V R_L=2.5Ω R_{GEN}=3Ω	-	3.0	-	ns
Rise time	tr		-	7.5	-	
Turn-off delay time	$t_{D(OFF)}$		-	20	-	
Fall time	tf		-	6.0	-	
Total gate charge	Q_g	V_{DS}=10V,I_D=6A V_{GS}=4.5V	-	5.2	-	nC
Gate-source charge	Q_{gs}		-	2.5	-	
Gate-drain charge	Q_{gd}		-	1	-	

P-Channel Electrical Characteristics (T_J=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	-20	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS}=-20V, V_{GS}=0V	-	-	-1	μA
Gate-body leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±12V	-	-	±100	nA
ON Characteristics						
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.5	-0.8	-1.2	V
Drain-source on-state resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-5.5A	-	38	50	mΩ
		V_{GS}=-4.5V, I_D=-4A	-	52	65	
Forward transconductance	gfs	V_{DS}=-5V, I_D=-5A	-	8.5	-	S
Dynamic Characteristics						
Input capacitance	C_{ISS}	V_{DS}=-10V ,V_{GS}=0V f=1.0MHz	-	760	-	pF
Output capacitance	C_{OSS}		-	290	-	
Reverse transfer capacitance	C_{RSS}		-	190	-	
Gate resistance	Rg	V_{GS}=0V, V_{DS}=0V, f=1.0MHz	-	1.8	-	Ω
Switching Characteristics						
Turn-on delay time	$t_{D(ON)}$	V_{DS}=-10V V_{GS}=-4.5V R_L=2.3Ω R_{GEN}=3Ω	-	11	-	ns
Rise time	tr		-	30	-	
Turn-off delay time	$t_{D(OFF)}$		-	29	-	
Fall time	tf		-	9	-	
Total gate charge	Qg	V_{DS}=-10V,I_D=-5A V_{GS}=-4.5V	-	7.6	-	nC
Gate-source charge	Qgs		-	1.2	-	
Gate-drain charge	Qgd		-	1.6	-	

Package Information

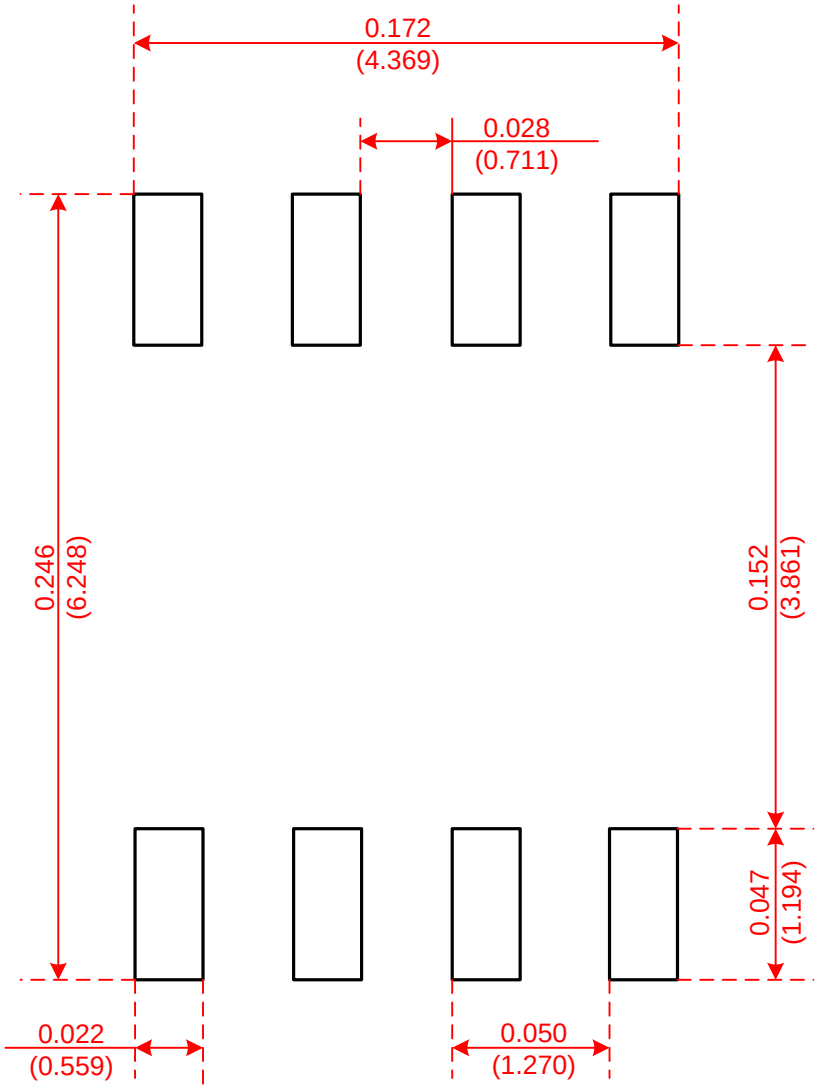
- **SOP-8**



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

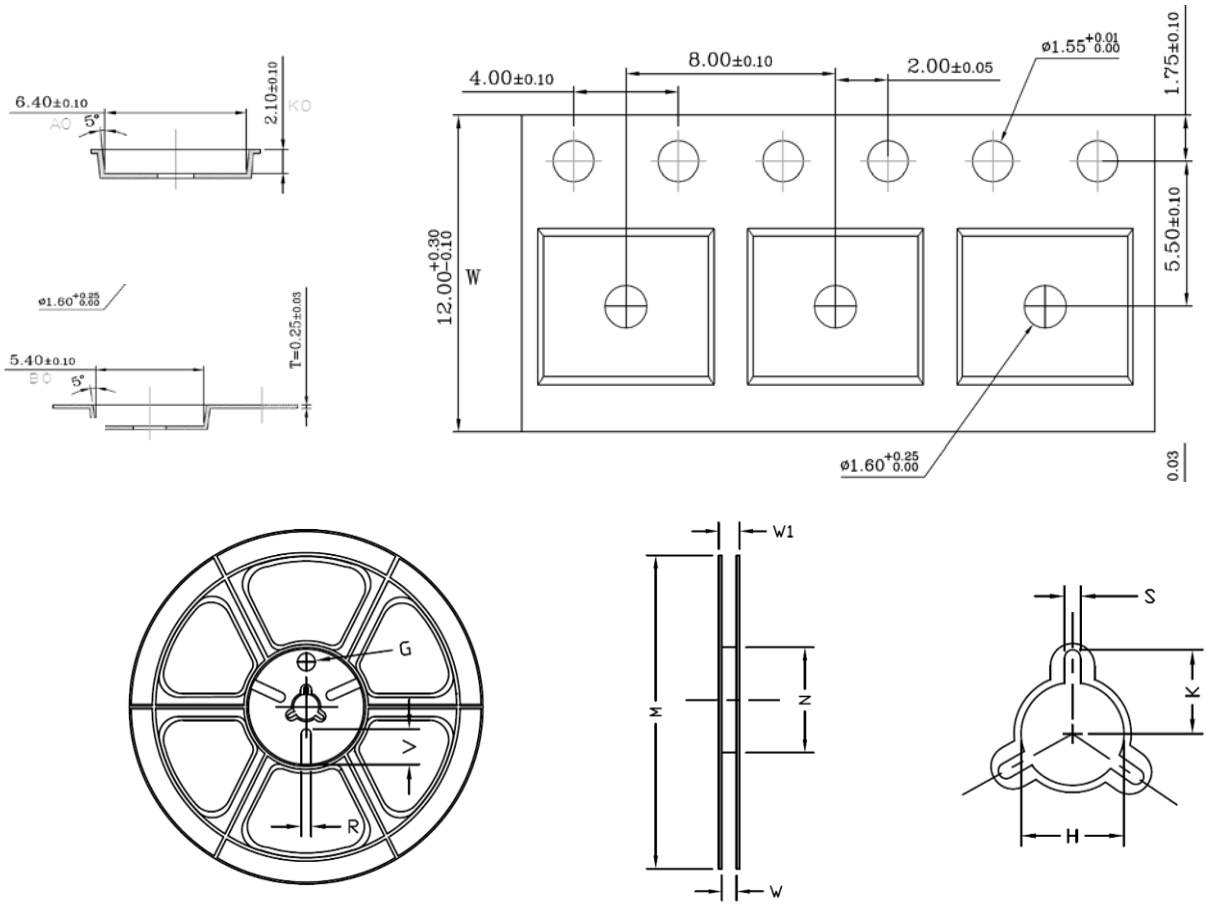
- **SOP-8**



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