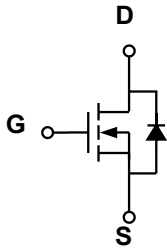


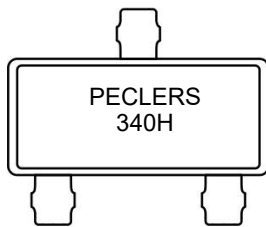
## 30V N-Channel Enhancement Mode MOSFET

### Schematic diagram



### Marking and pin assignment

ESOT-23  
(TOP VIEW)



### Description

The PECN3400HR uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , low gate charge and high density cell Design for ultra low on-resistance. This device is suitable for use as a load switch or in PWM applications.

### General Features

- ◆  $V_{DS} = 30V$ ,  $I_D = 6A$
- ◆  $R_{DS(ON)}(Typ.) = 34.7m\Omega$  @  $V_{GS} = 2.5V$
- ◆  $R_{DS(ON)}(Typ.) = 25m\Omega$  @  $V_{GS} = 4.5V$
- ◆ High power and current handling capability
- ◆ Lead free product is acquired
- ◆ Surface mount package

### Application

- ◆ PWM applications
- ◆ Load switch

### Package

- ◆ ESOT-23



### Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
PECN3400HR	-55°C to +150°C	ESOT-23	5000

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

parameter	symbol	limit	unit
Drain-source voltage	$V_{DS}$	30	V
Gate-source voltage	$V_{GS}$	±12	V
Drain current-continuous <sup>a</sup> @Tj=125°C -pulse <sup>d</sup>	$I_D$	6	A
	$I_{DM}$	28	A
Drain-source Diode forward current	$I_S$	2	A
Maximum power dissipation	$P_D$	1.4	W
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	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$	-	-	1	$\mu A$
Gate-body leakage	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 12V$	-	-	$\pm 100$	nA
<b>ON Characteristics</b>						
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.45	0.62	0.85	V
Drain-source on-state resistance	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=4A$	-	25	42.5	m $\Omega$
		$V_{GS}=2.5V, I_D=3A$		34.7	61	
Forward transconductance	gfs	$V_{GS}=5V, I_D=4A$	-	33	-	S
<b>Dynamic Characteristics</b>						
Input capacitance	$C_{ISS}$	$V_{DS}=15V, V_{GS}=0V$ $f=1.0MHz$	-	466	-	pF
Output capacitance	$C_{OSS}$		-	58	-	
Reverse transfer capacitance	$C_{RSS}$		-	43	-	
<b>Switching Characteristics</b>						
Turn-on delay time	$t_{D(ON)}$	$V_{DS}=15V$ $V_{GS}=5V$ $R_L=2.6\ ohm$ $R_{GEN}=3ohm$	-	3	-	ns
Rise time	tr		-	2.5	-	
Turn-off delay time	$t_{D(OFF)}$		-	25	-	
Fall time	tf		-	4	-	
Total gate charge	Qg	$V_{DS}=15V, I_D=4A$ $V_{GS}=4.5V$	-	10.6	-	nC
Gate-source charge	Qgs		-	1.17	-	
Gate-drain charge	Qgd		-	1.15	-	
<b>DRAIN-SOURCE DIODE CHARACTERISTICS</b>						
Diode forward voltage	$V_{SD}$	$V_{GS}=0V, I_S=1A$	-	0.76	1.16	V

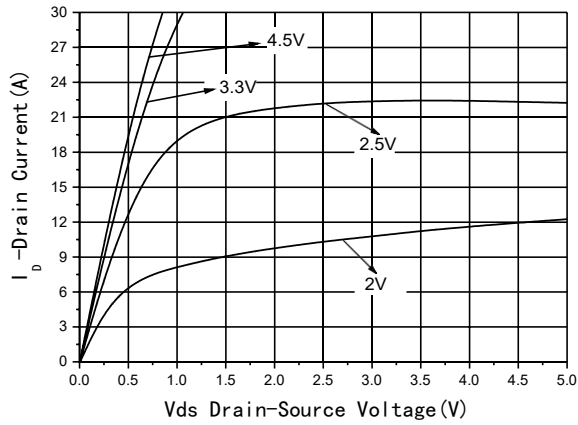
#### Notes:

- surface mounted on FR4 board,  $t \leq 10sec$
- pulse test: pulse width  $\leq 300\mu s$ , duty  $\leq 2\%$
- guaranteed by design, not subject to production testing

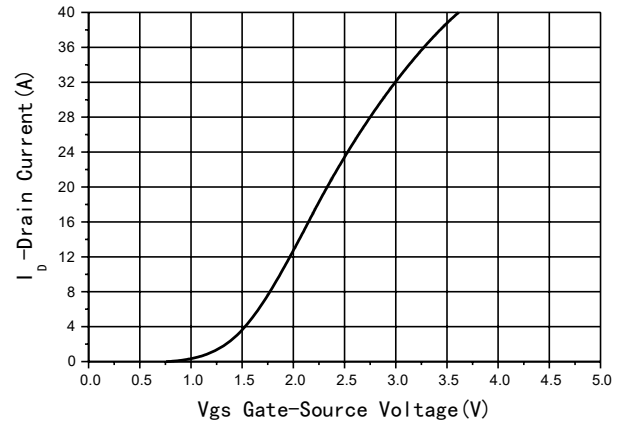
### Thermal Characteristics

Thermal Resistance junction-to ambient	Rth JA	100	$^{\circ}C/W$
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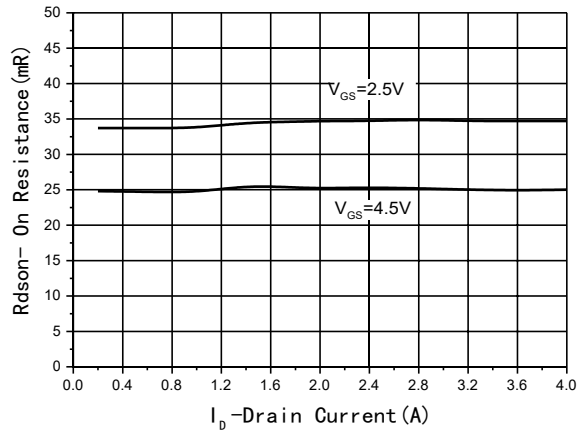
## Typical Performance Characteristics



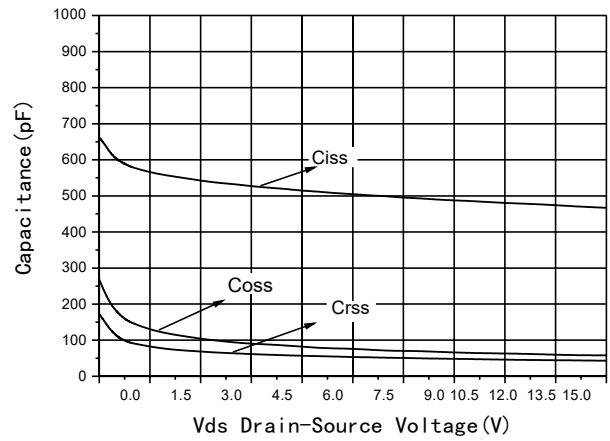
**Fig1 Output Characteristics**



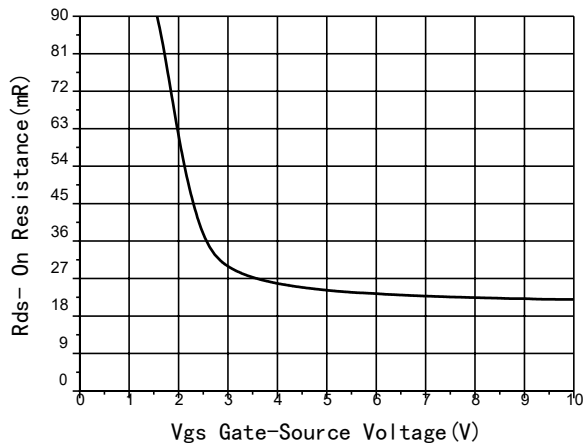
**Fig2 Transfer Characteristics**



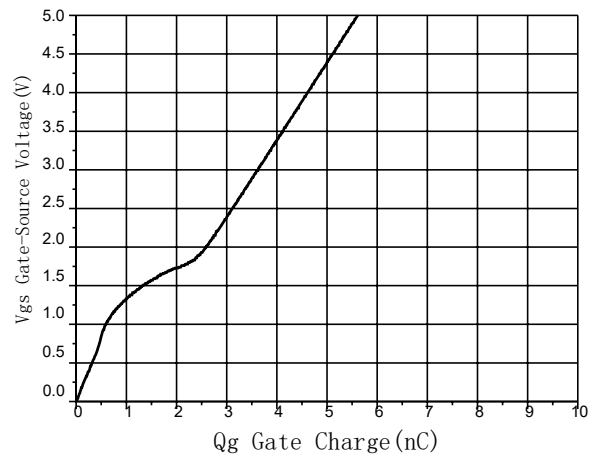
**Fig3 Rds(on)-Drain current**



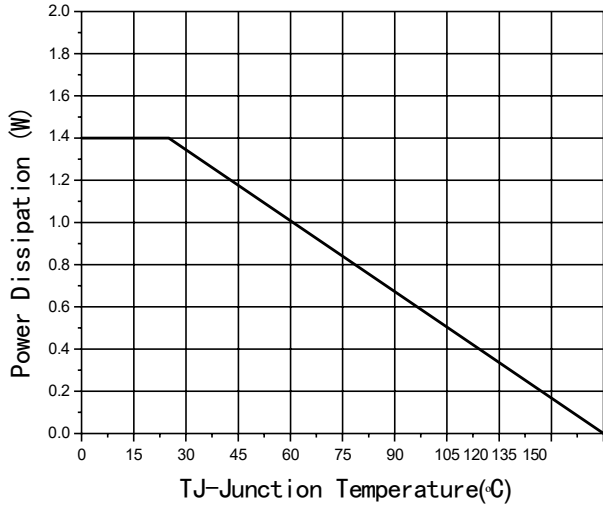
**Fig4 Capacitance vs Vds**



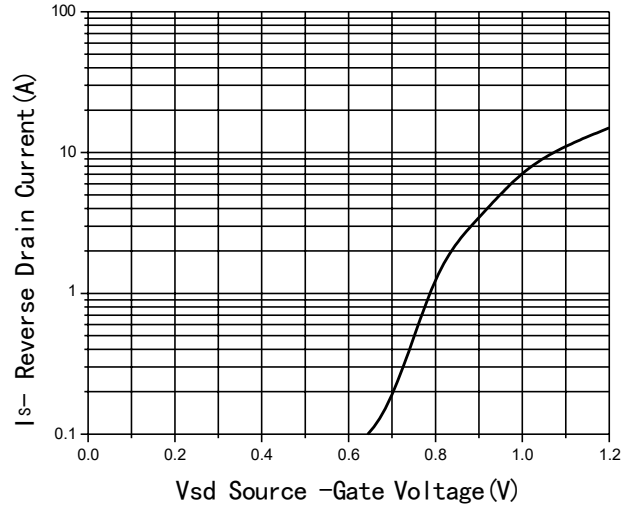
**Fig5 Rds(on)-Gate Drain voltage**



**Fig6 Gate Charge**



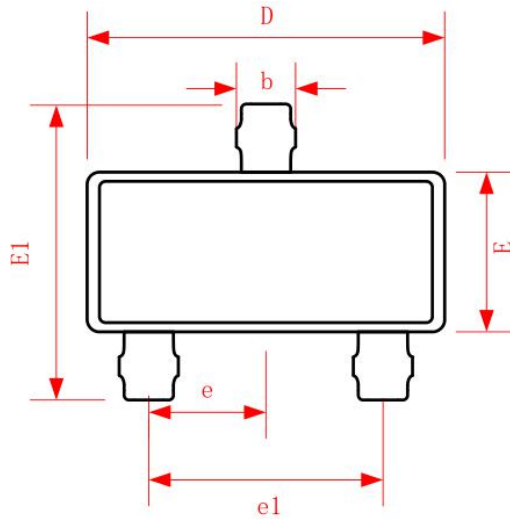
**Fig7 Power De-rating**



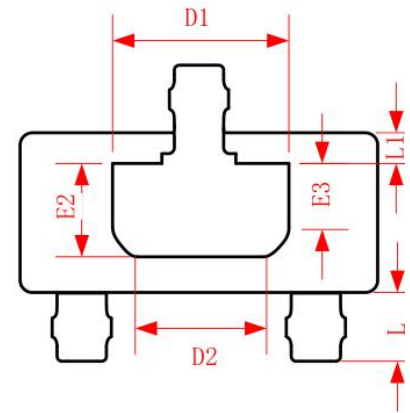
**Fig8 Source-Drain Diode Forward**

### Package Information

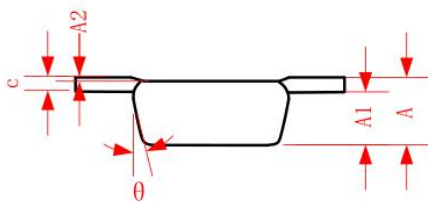
- ESOT-23



Top View  
【顶视图】



Bottom View  
【背视图】



Side View  
【侧视图】

Symbol	Dimensions In Millimeters		
	Min.	REF.	Max.
A	0.500	0.550	0.600
A1	0.368	0.398	0.428
A2	-0.030	0.000	0.030
c	0.152Ref		
D	2.850	2.900	2.950
E	1.250	1.300	1.350
E1	2.350	2.400	2.450
D1	1.405	1.430	1.455
D2	0.995	1.020	1.045
E2	0.735	0.760	0.785
E3	0.490	0.520	0.545
L	0.525	0.550	0.575
L1	0.235	0.260	0.285
e	0.950Ref		
e1	1.800	1.900	2.000
b	0.410	0.480	0.550
θ	14°	15°	16°