

## 1. Description

The CSD18532Q5B(ES) is N-Channel enhancement MOS Field Effect Transistor. Uses advanced shielded gate trench technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge. Device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product CSD18532Q5B(ES) is Pb-free.

## 2. Features

- 60V,  $R_{DS(ON)}=1.9m\Omega(Typ.) @V_{GS}=10V$
- $R_{DS(ON)}=2.6m\Omega(Typ.) @V_{GS}=4.5V$
- High density cell design for low  $R_{DS(on)}$
- Material: Halogen free
- Reliable and rugged
- Avalanche Rated
- Low leakage current


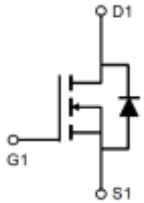
## 3. Applications

- PWM applications
  - Load switch
  - Power management in portable/desktop PCs
  - DC/DC conversion
- 100% UIS TESTED

## 4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per Reel	Flammability Rating	Reel size
CSD18532Q5B(ES)	PDFN5*6-8L	.GNJ06R025/LOT	Halogen free	Tape & Reel	5,000 PCS	UL 94V-0	13 inches

## 5. Pin Configuration and Functions

Pin	Function	Outline	Circuit Diagram
4	Gate	Note b 	
1/2/3	Source		
5/6/7/8	Drain		

## 6. Specification

### Absolute Maximum Rating & Thermal Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$BV_{DSS}$	60	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	$T_C=25^{\circ}C$	190
		$T_C=100^{\circ}C$	95
Maximum Power Dissipation	$P_D$	156	W
Pulsed Drain Current	$I_{DM}$	560	A
Single Pulse Avalanche Current <sup>a</sup>	$I_{AS}$	35	A
Single Pulse Avalanche Energy <sup>a</sup>	$E_{AS}$	306	mJ
Operating Junction Temperature	$T_J$	150	°C
Lead Temperature	$T_L$	260	°C
Storage Temperature Range	$T_{stg}$	-55 to 150	°C

### Thermal resistance ratings

Single Operation				
Parameter	Symbol	Typical	Maximum	Unit
Junction-to-Case Thermal Resistance	$R_{\theta JC}$		0.8	°C/W

Notes:

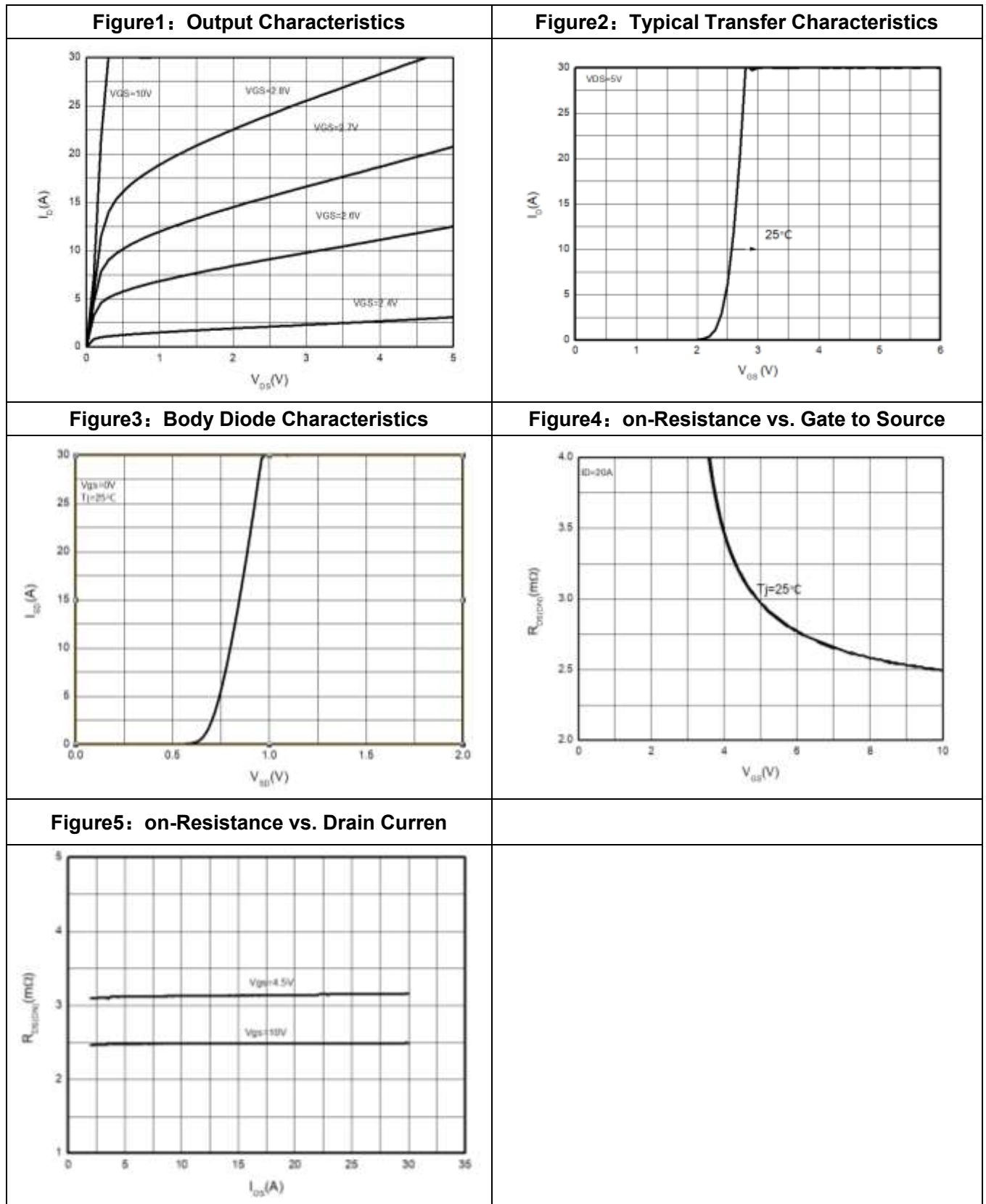
- a. EAS condition: Starting  $T_J=25^{\circ}C$ ,  $V_{DD}=30V$ ,  $V_G=10V$ ,  $R_G=25\Omega$ ,  $L=0.5mH$
- b. This diagram is only an electrical schematic, and the actual pin size is based on POD.

## Electrical Characteristics

At TA = 25°C unless otherwise specified

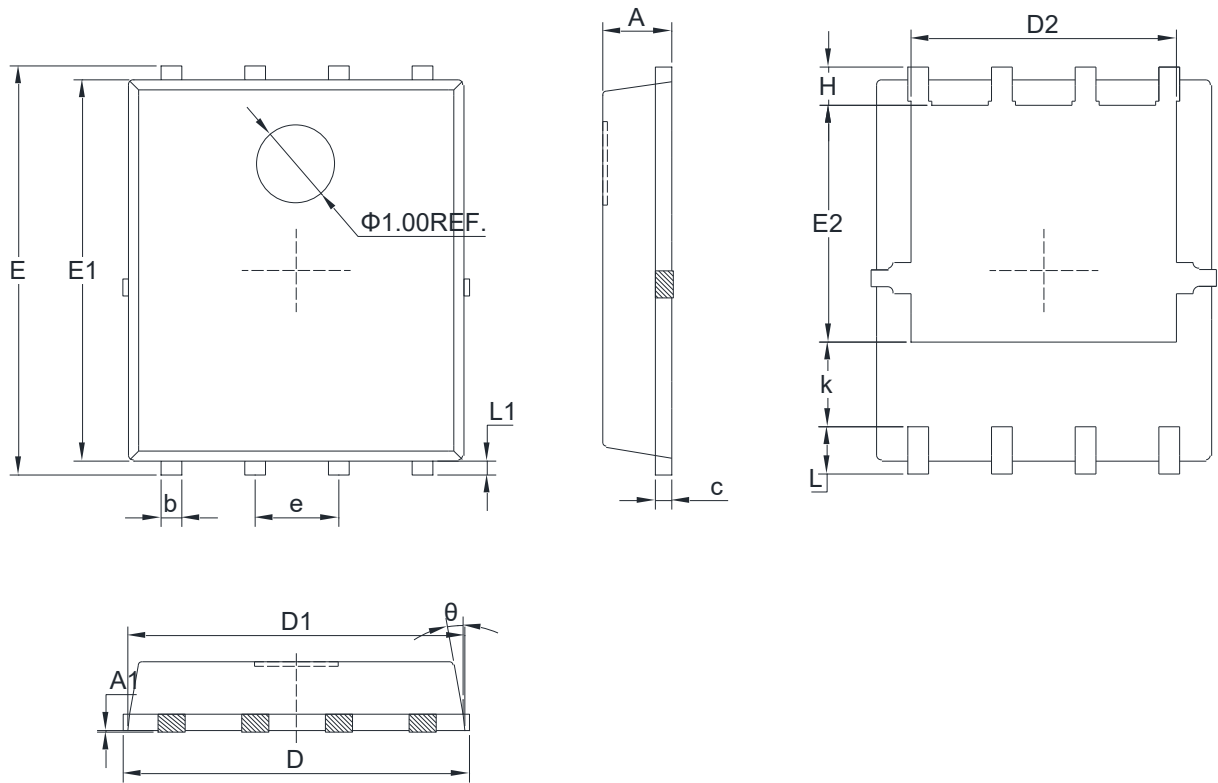
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-to-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$			1	$\mu A$
Gate-to-source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.0	1.6	2.5	V
Drain-to-source On-resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=30A$		1.9	2.5	m $\Omega$
		$V_{GS}=4.5V, I_D=20A$		2.6	3.4	
<b>CHARGES, CAPACITANCES AND GATE RESISTANCE</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0V, f=1MHz, V_{DS}=25V$		5440		pF
Output Capacitance	$C_{OSS}$			2200		
Reverse Transfer Capacitance	$C_{RSS}$			135		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS}=10V, V_{DD}=30V, I_D=30A$		102		nC
Gate-to-Source Charge	$Q_{GS}$			18		
Gate-to-Drain Charge	$Q_{GD}$			22		
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Delay Time	$t_{d(ON)}$	$V_{GS}=10V, V_{DD}=30V, I_D=30A, R_G=3\Omega$		16		ns
Rise Time	$t_r$			38		
Turn-Off Delay Time	$t_{d(OFF)}$			80		
Fall Time	$t_f$			95		
<b>BODY DIODE CHARACTERISTICS</b>						
Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=30A$		0.9	1.5	V

7. Typical Characteristics



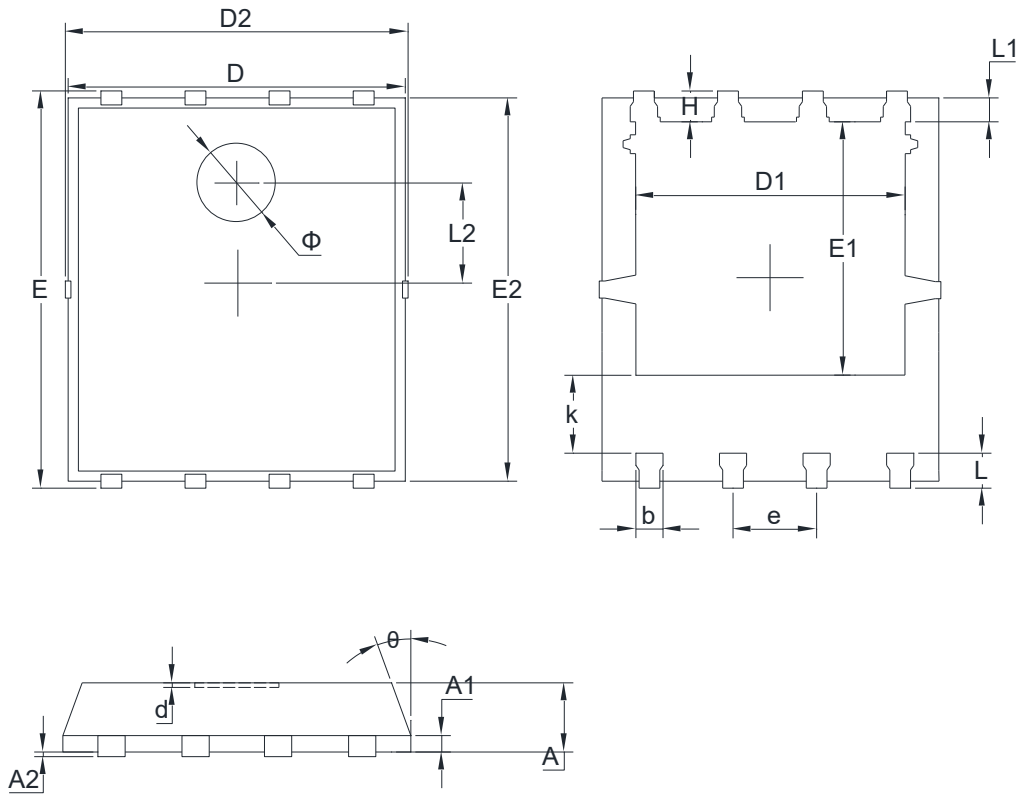
### 8. Dimension (PDFN5\*6-8L)

POD A(Q)



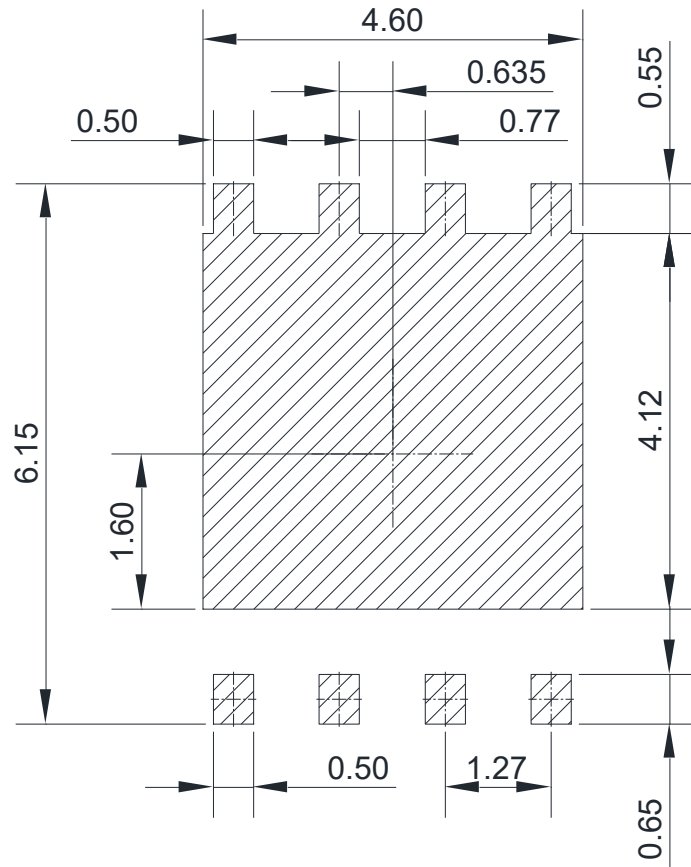
Symbol	Dimensions in Millimeters			Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX		MIN	NOM	MAX
A	0.90	1.00	1.10	H	0.46	0.56	0.66
A1			0.05	k	1.10		
b	0.30	0.40	0.50	L	0.51	0.61	0.71
c	0.20	0.25	0.30	L1	0.05	0.15	0.25
D	4.80	5.10	5.40	$\theta$	8°	10°	12°
D2	3.75	3.90	4.05	D1	4.80	4.90	5.00
E	5.95	6.05	6.15				
E1	5.65	5.75	5.85				
e	1.27BCS						
E2	3.34	3.49	3.64				

POD B(X)



Symbol	Dimensions in Millimeters			Symbol	Dimensions in Millimeters		
	MIN	NOM	MAX		MIN	NOM	MAX
A	0.900	1.000	1.100	H	0.549	0.625	0.701
A1	0.254 REF			k	1.190	1.290	1.390
A2	0.000		0.050	L	0.534	0.610	0.686
D	4.824	4.900	4.976	L1	0.424	0.500	0.576
D1	3.910	4.010	4.110	$\theta$	8°	10°	12°
D2	4.924	5.000	5.076	L2	1.800 REF		
E	5.924	6.000	6.076	$\Phi$	1.100	1.200	1.300
E1	3.375	3.475	3.575	d			0.100
e	1.270 TYP			b	0.350	0.400	0.450
E2	5.674	5.750	5.826				

9. Recommended Soldering Footprint



DIMENSIONS: MILLIMETERS

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