

SuperMOS - SOT23-3L -60V BV_{DSS} , 155m Ω $R_{DS(on)}$, P-channel MOSFET

1. Description

The SI2309CDS-T1-GE3(ES) is P-Channel enhancement MOS Field Effect Transistor. Uses advanced 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 SI2309CDS-T1-GE3(ES) is Pb-free.

2. Features

- -60V, $R_{DS(ON)}$ =155m Ω (Typ.) @ V_{GS} =-10V
 $R_{DS(ON)}$ =195m Ω (Typ.) @ V_{GS} =-4.5V
- Fast Switching
- High density cell design for low $R_{DS(on)}$
- Material: Halogen free
- Reliable and rugged
- Avalanche Rated
- Low leakage current

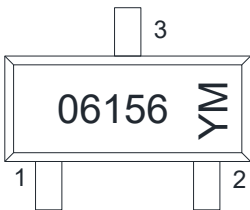
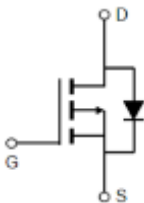
3. Applications

- PWM applications
- Load switch
- Power management in portable/desktop PCs
- DC/DC conversion

4. Ordering Information

Part Number	Package	Marking	Material	Packing	Quantity per reel	Flammability Rating	Reel size
SI2309CDS-T1-GE3(ES)	SOT23-3L	06156	Halogen free	Tape & Reel	3,000 PCS	UL 94V-0	7 inches

5. Pin Configuration and Functions

Pin	Function	Outline	Circuit Diagram
1	Gate		
2	Source		
3	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	$T_A=25^{\circ}\text{C}$	I_D	-1.8	A
	$T_A=100^{\circ}\text{C}$		-1.08	
Maximum Power Dissipation		P_D	1.2	W
Pulsed Drain Current		I_{DM}	-7.2	A
Operating Junction Temperature		T_J	-55 to +150	°C
Storage Temperature Range		T_{stg}	-55 to +150	°C

Thermal resistance ratings

Single Operation			
Parameter	Symbol	Max	Unit
Junction-to-Ambient Thermal Resistance	$R_{\theta JA}$	104	°C/W

SI2309CDS-T1-GE3(ES)

Rev-1.1

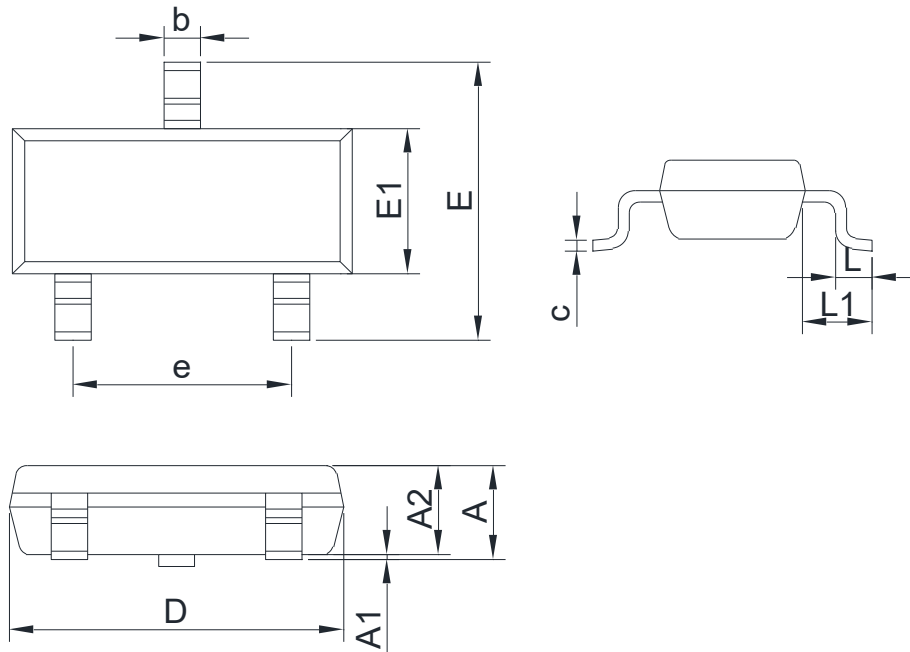
Electrical Characteristics

At TA = 25°C unless otherwise specified

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250uA	-60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{GS} =0V, V _{DS} =-60V			-1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =-250uA	-1.1	-1.6	-2.2	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-1.5A		155	201	mΩ
		V _{GS} =-4.5V, I _D =-1A		195	253	
CHARGES AND CAPACITANCES						
Input Capacitance	C _{ISS}	V _{GS} =0V, V _{DS} =-25V f=1MHz		533		pF
Output Capacitance	C _{OSS}			29		
Reverse Transfer Capacitance	C _{RSS}			23		
Total Gate Charge	Q _{G(TOT)}	V _{GS} =0 to -10V, V _{DS} =-30V, I _D =-1.5A		9.5		nC
Gate-to-Source Charge	Q _{GS}			1.5		
Gate-to-Drain Charge	Q _{GD}			2		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{d(ON)}	V _{GS} =-10V, V _{DD} =-30V I _D =-1.5A, R _G =3Ω		45		ns
Rise Time	t _r			33		
Turn-Off Delay Time	t _{d(OFF)}			15		
Fall Time	t _f			11		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} =0V, I _{SD} =-1.5A			-1.2	V

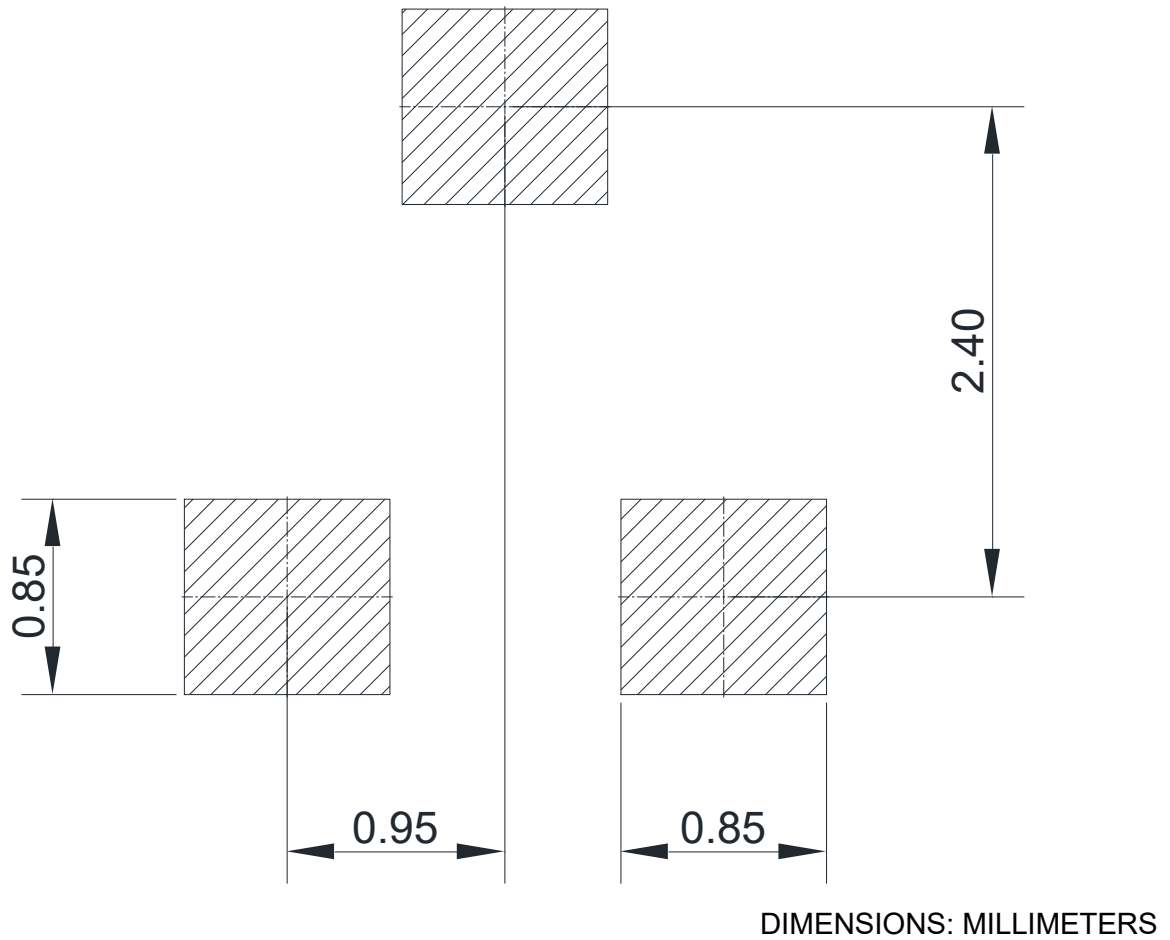
7. Dimension (SOT23-3L)

POD(Z)



COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER					
SYMBOL	MIN	MAX	SYMBOL	MIN	MAX
A	1.00	1.30	D	2.70	3.10
A1	0.00	0.11	E	2.60	3.00
A2	1.00	1.25	E1	1.50	1.80
b	0.30	0.50	e	1.70	2.10
c	0.10	0.25	L	0.30	0.55
L1	0.55	0.70			

8. Recommended Soldering Footprint



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