

EVVOSEMI[®]

THINK CHANGE DO



ESD



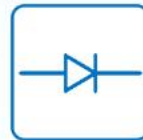
TVS



MOS



LDO



Diode



Sensor



DC-DC

Product Specification

▶ Domestic	Part Number	SI2333CDS
▶ Overseas	Part Number	SI2333CDS
▶ Equivalent	Part Number	SI2333CDS

EV is the abbreviation of name EVVO

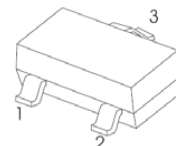
P-Channel 12 V (D-S) MOSFET

MOSFET PRODUCT SUMMARY

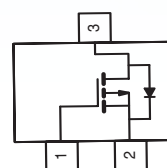
V_{DS} (V)	$R_{DS(on)}$ (m Ω)	I_D (A) ^a	Q_g (Typ.)
- 12	35 at $V_{GS} = - 4.5$ V	- 5.1	9 nC
	45 at $V_{GS} = - 2.5$ V	- 4.5	
	59 at $V_{GS} = - 1.8$ V	- 3.9	

APPLICATIONS

- Load Switch
- PA Switch

SOT-23


1. GATE
2. SOURCE
3. DRAIN



ABSOLUTE MAXIMUM RATINGS $T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise noted

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	- 12	V
Gate-Source Voltage	V_{GS}	± 8	
Continuous Drain Current ($T_J = 150\text{ }^{\circ}\text{C}$)	$T_C = 25\text{ }^{\circ}\text{C}$	- 7.1	A
	$T_C = 70\text{ }^{\circ}\text{C}$	- 5.7	
	$T_A = 25\text{ }^{\circ}\text{C}$	- 5.1 ^{b, c}	
	$T_A = 70\text{ }^{\circ}\text{C}$	- 4.0 ^{b, c}	
Pulsed Drain Current	I_{DM}	- 20	A
Continuous Source-Drain Diode Current	$T_C = 25\text{ }^{\circ}\text{C}$	- 1.0	
	$T_A = 25\text{ }^{\circ}\text{C}$	- 0.63 ^{b, c}	
Maximum Power Dissipation	$T_C = 25\text{ }^{\circ}\text{C}$	2.5	W
	$T_C = 70\text{ }^{\circ}\text{C}$	1.6	
	$T_A = 25\text{ }^{\circ}\text{C}$	1.25 ^{b, c}	
	$T_A = 70\text{ }^{\circ}\text{C}$	0.8 ^{b, c}	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to 150	$^{\circ}\text{C}$

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^{b, d}	R_{thJA}	75	100	$^{\circ}\text{C/W}$
Maximum Junction-to-Foot (Drain)	R_{thJF}	40	50	

Notes:

a. Based on $T_C = 25\text{ }^{\circ}\text{C}$.

b. Surface Mounted on 1" x 1" FR4 board.

c. $t = 5$ s.

d. Maximum under Steady State conditions is 166 $^{\circ}\text{C/W}$.

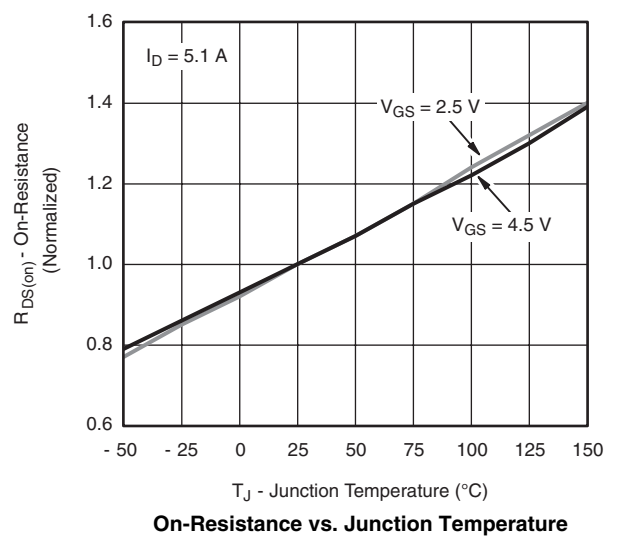
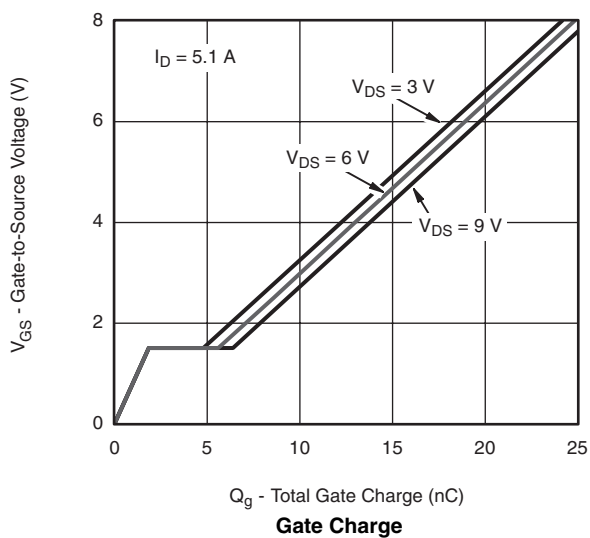
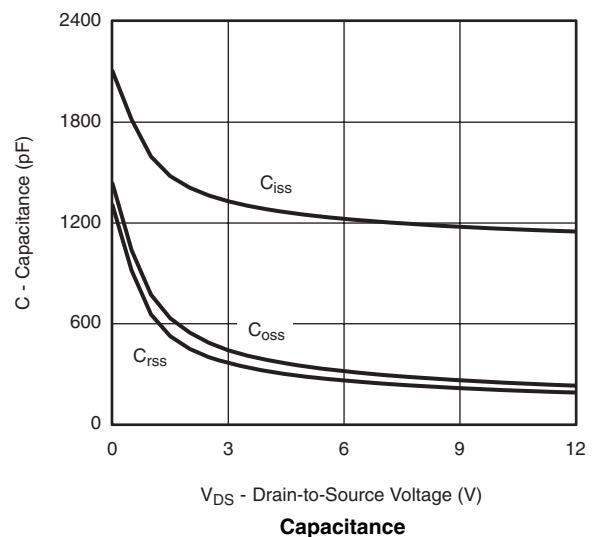
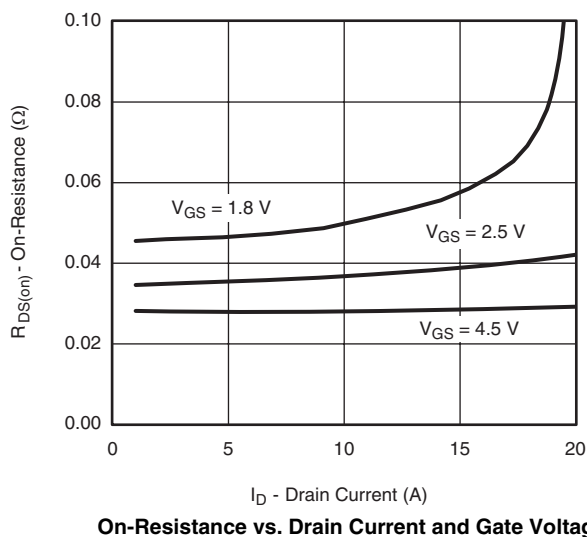
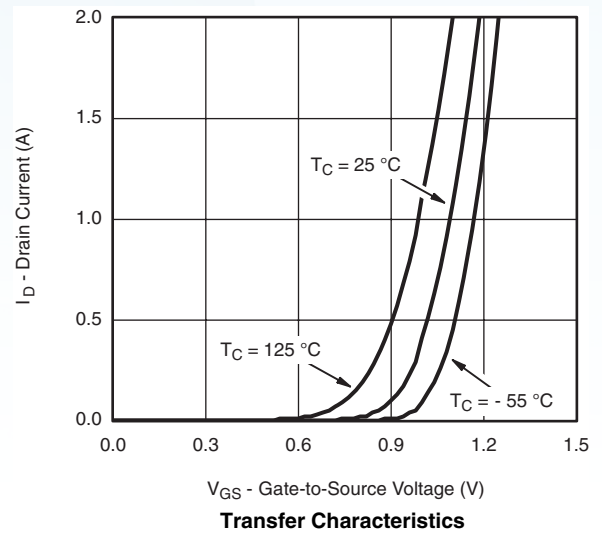
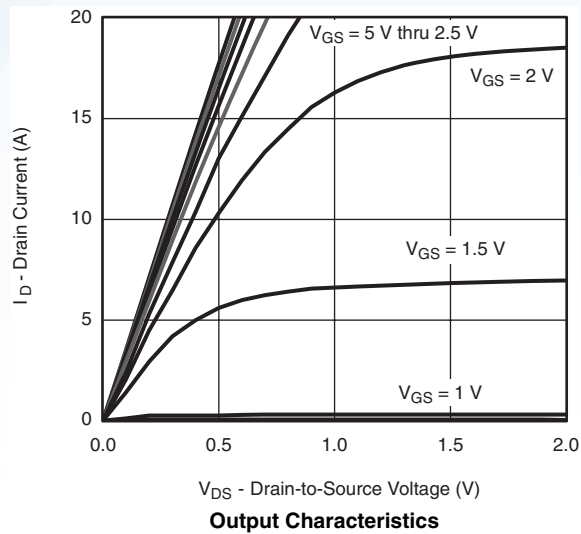
P-Channel 12 V (D-S) MOSFET
MOSFET SPECIFICATIONS $T_J = 25\text{ }^{\circ}\text{C}$, unless otherwise noted

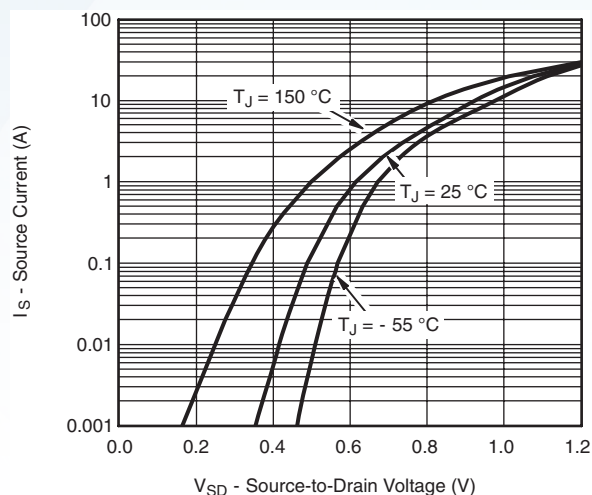
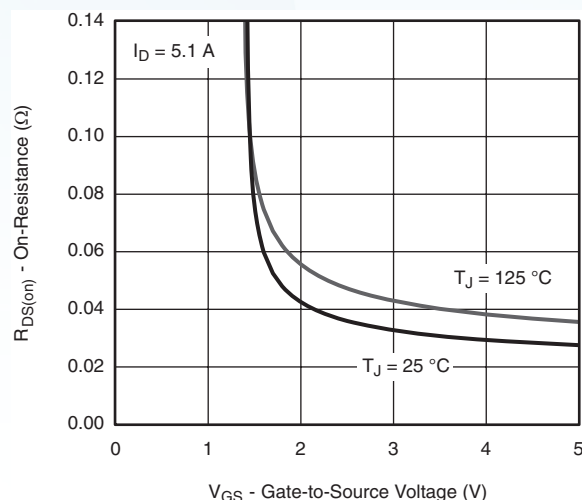
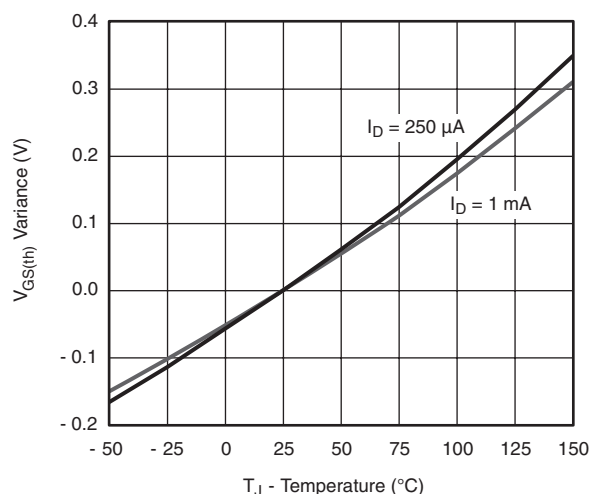
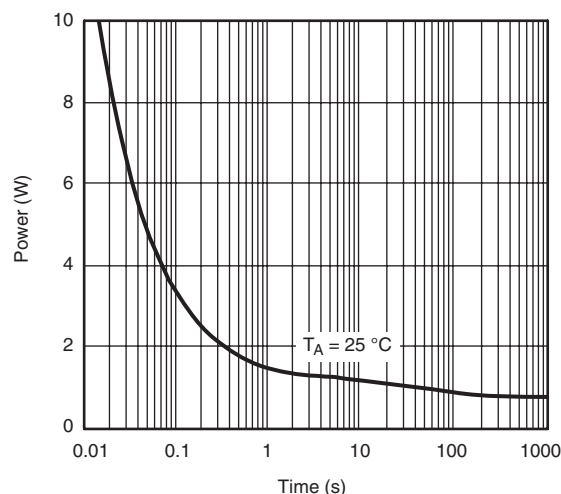
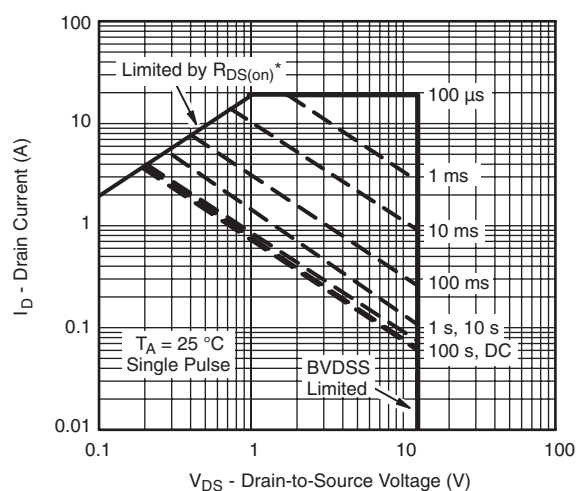
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{DS}	V _{DS} = 0 V, I _D = - 250 μA	- 12			V
V _{DS} Temperature Coefficient	ΔV _{DS} /T _J	I _D = - 250 μA		- 13		mV/°C
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)} /T _J			2.6		
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = - 250 μA	- 0.4		- 1	V
Gate-Source Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 8 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = - 12 V, V _{GS} = 0 V			- 1	μA
		V _{DS} = - 12 V, V _{GS} = 0 V, T _J = 55 °C			- 10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≤ - 5 V, V _{GS} = - 4.5 V	- 20			A
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = - 4.5 V, I _D = - 5.1 A		28.5	35	mΩ
		V _{GS} = - 2.5 V, I _D = - 4.5 A		36	45	
		V _{GS} = - 1.8 V, I _D = - 2.0 A		46	59	
Forward Transconductance ^a	g _{fs}	V _{DS} = - 5 V, I _D = - 5.3 A		18.5		S
Dynamic ^b						
Input Capacitance	C _{iss}	V _{DS} = - 6 V, V _{GS} = 0 V, f = 1 MHz		1225		pF
Output Capacitance	C _{oss}			315		
Reverse Transfer Capacitance	C _{rss}			260		
Total Gate Charge	Q _g	V _{DS} = - 6 V, V _{GS} = - 4.5 V, I _D = - 5.1 A		15	25	nC
		V _{DS} = - 6 V, V _{GS} = - 2.5 V, I _D = - 5.1 A		9	15	
Gate-Source Charge	Q _{gs}			1.9		
Gate-Drain Charge	Q _{gd}			3.8		
Gate Resistance	R _g	f = 1 MHz		4.0		Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = - 6 V, R _L = 6 Ω I _D = - 1 A, V _{GEN} = - 4.5 V, R _G = 1 Ω		13	20	ns
Rise Time	t _r			35	60	
Turn-Off Delay Time	t _{d(off)}			45	70	
Fall Time	t _f			12	20	
Drain-Source Body Diode Characteristics						
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C			- 1.0	A
Pulse Diode Forward Current ^a	I _{SM}				- 20	
Body Diode Voltage	V _{SD}	I _S = - 1.0 A		- 0.7	- 1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I _F = - 1.0 A, dI/dt = 100 A/μs, T _J = 25 °C		32	50	ns
Body Diode Reverse Recovery Charge	Q _{rr}			20	40	nC
Reverse Recovery Fall Time	t _a			16		ns
Reverse Recovery Rise Time	t _b			16		

Notes:

a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.

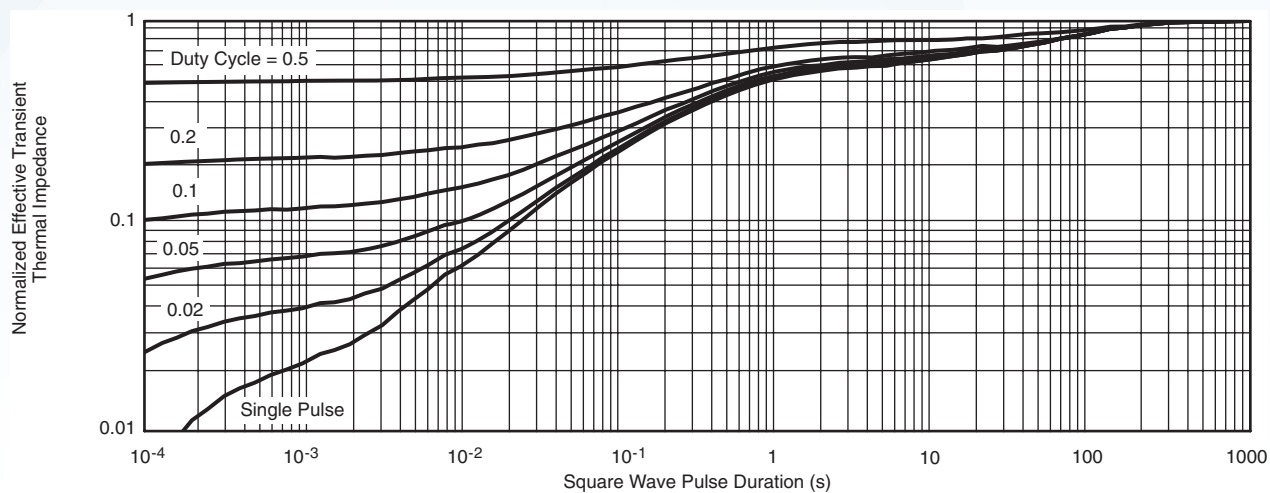
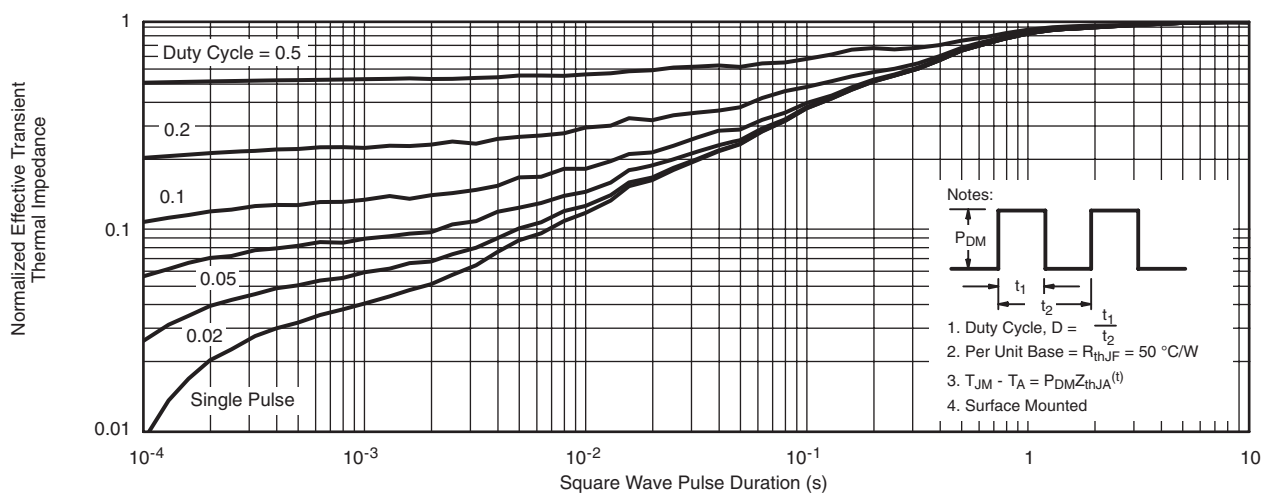
b. Guaranteed by design, not subject to production testing.

P-Channel 12 V (D-S) MOSFET
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted


P-Channel 12 V (D-S) MOSFET
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

Source-Drain Diode Forward Voltage

On-Resistance vs. Gate-to-Source Voltage

Threshold Voltage

Single Pulse Power


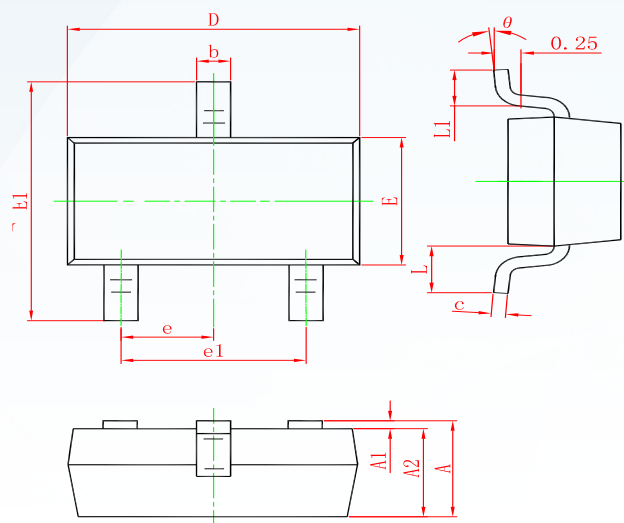
* V_{GS} > minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area

P-Channel 12 V (D-S) MOSFET
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

Normalized Thermal Transient Impedance, Junction-to-Ambient

Normalized Thermal Transient Impedance, Junction-to-Foot

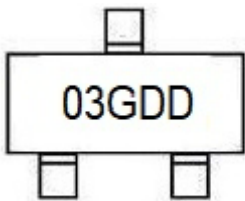
P-Channel 12 V (D-S) MOSFET

SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
SI2333CDS	SOT-23	3000	Tape and reel

Disclaimer

EVVOSEMI ("EVVO") reserves the right to make corrections, enhancements, improvements, and other changes to its products and services at any time, and to discontinue any product or service without notice.

EVVO warrants the performance of its hardware products to the specifications applicable at the time of sale in accordance with its standard warranty. Testing and other quality control techniques are used as deemed necessary by EVVO to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

Customers should obtain and confirm the latest product information and specifications before final design, purchase, or use. EVVO makes no warranty, representation, or guarantee regarding the suitability of its products for any particular purpose, nor does EVVO assume any liability for application assistance or customer product design. EVVO does not warrant or accept any liability for products that are purchased or used for any unintended or unauthorized application.

EVVO products are not authorized for use as critical components in life support devices or systems without the express written approval of EVVOSEMI.

The EVVO logo and EVVOSEMI are trademarks of EVVOSEMI or its subsidiaries in relevant jurisdictions. EVVO reserves the right to make changes without further notice to any products herein.