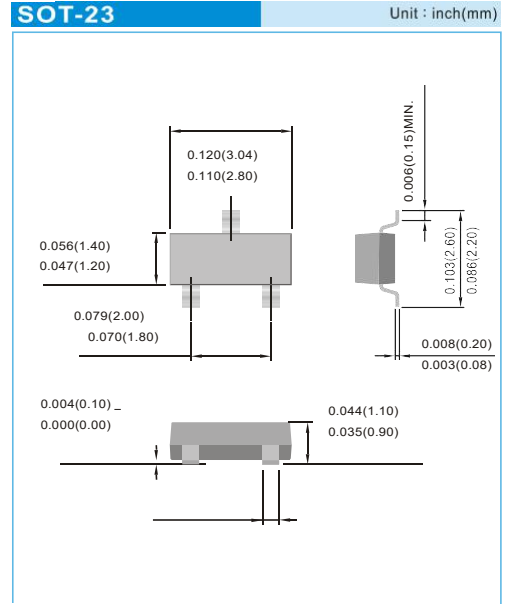


CSMSS138S23

60V N-Channel Enhancement Mode MOSFET

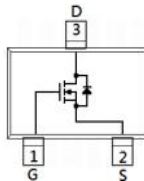
FEATERES

- $R_{DS(ON)}, V_{GS}@10V, I_{DS}@500mA=1.5 \Omega$
- $R_{DS(ON)}, V_{GS}@4.5V, I_{DS}@200mA=2 \Omega$
- $R_{DS(ON)}, V_{GS}@2.5V, I_{DS}@100mA=3 \Omega$
- Advanced Trench Process Technology
- High Density Cell Design For Ultra Low On-Resistance
- Very Low Leakage Current In Off Condition
- Specially Designed for Battery Operated Systems, Solid-State Relays Drivers : Relays, Displays, Lamps, Solenoids, Memories, etc.



MECHANICAL DATA

- Case: SOT-23 Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0003 ounce, 0.0084 gram



Maximum Ratings and Thermal Characteristics (T_A =25°C unless otherwise noted)

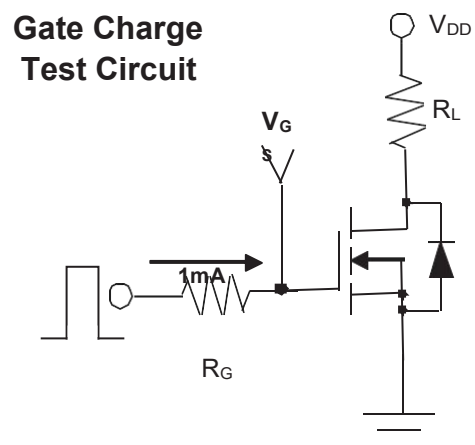
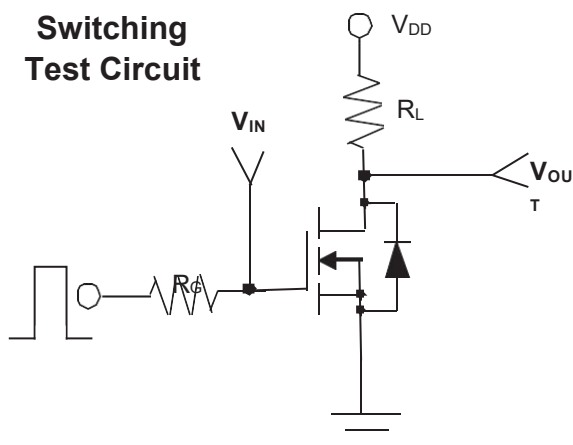
PA RA ME TE R	S ymbol	Li mi t	Uni ts
Drain- Source Voltage	V _{DS}	60	V
Gate -Source Voltage	V _{GS}	± 20	V
Continuous Drain Current	I _D	300	m A
Pulsed Drain Current ¹⁾	I _{DM}	2000	m A
Maximum Power Dissipation T _A =25°C T _A =75°C	P _D	350 210	M W
Operating Junction and Storage Temperature Rang e	T _J , T _{STG}	- 55 to + 150	°C
Junction-to Ambient Thermal Resistance(PCB mounted) ²⁾	R _{θJA}	357	°C/ W

Note: 1. Maximum DC current limited by the package
2. Surface mounted on FR4 board, t < 5 sec

CSMSS138S23

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Units
Static						
Drain-Source Breakdown Voltage	BV_{DS}	$V_{GS}=0V, I_D=10\mu A$	5.0	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.8	-	1.5	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=2.5V, I_D=100mA$	-	2.8	3	Ω
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=200mA$	-	1.8	2	
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=500mA$	-	1.6	1.5	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=50V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 10	μA
Forward Transconductance	g_{fs}	$V_{DS}=10V, I_D=250mA$	100	-	-	mS
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=25V, I_D=250mA$ $V_{GS}=4.5V$	-	-	1.0	nC
Turn-On Time	t_{on}	$V_{DD}=30V, R_L=100\Omega$ $I_D=300mA, V_{GEN}=10V$ $R_G=6\Omega$	-	-	40	ns
Turn-Off Time	t_{off}		-	-	150	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V$ $f=1.0MHz$	-	-	50	pF
Output Capacitance	C_{oss}		-	-	10	
Reverse Transfer Capacitance	C_{rss}		-	-	5	
Source-Drain Diode						
Diode Forward Voltage	V_{SD}	$I_S=250mA, V_{GS}=0V$	-	0.82	1.2	V
Continuous Diode Forward Current	I_S	-	-	-	300	mA
Pulse Diode Forward Current	I_{SM}	-	-	-	2000	mA



CSMSS138S23

Typical Characteristics Curves ($T_A=25^\circ\text{C}$, unless otherwise noted)

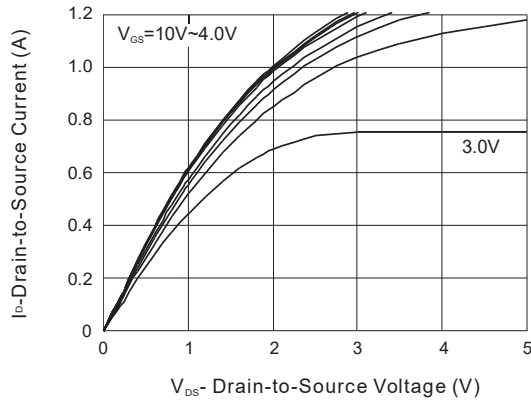


FIG.1- Output Characteristic

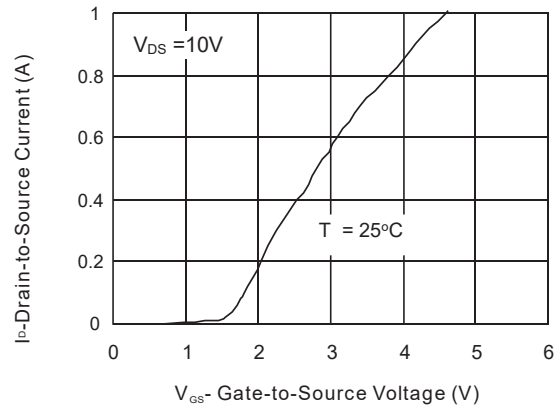


FIG.2- Transfer Characteristic

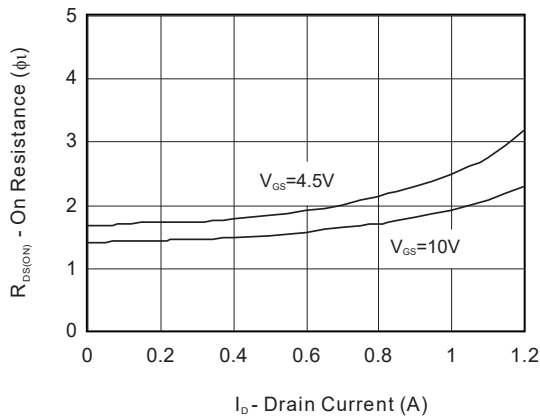


FIG.3- On Resistance vs Drain Current

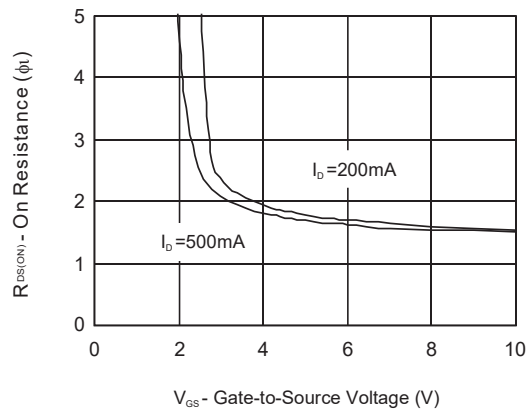


FIG.4- On Resistance vs Gate to Source Voltage

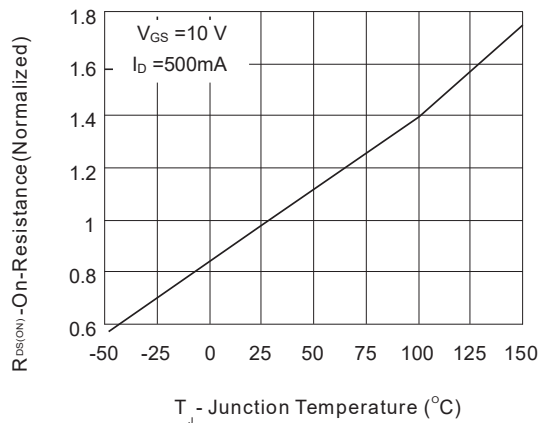


FIG.5- On Resistance vs Junction Temperature

CSMSS138S23

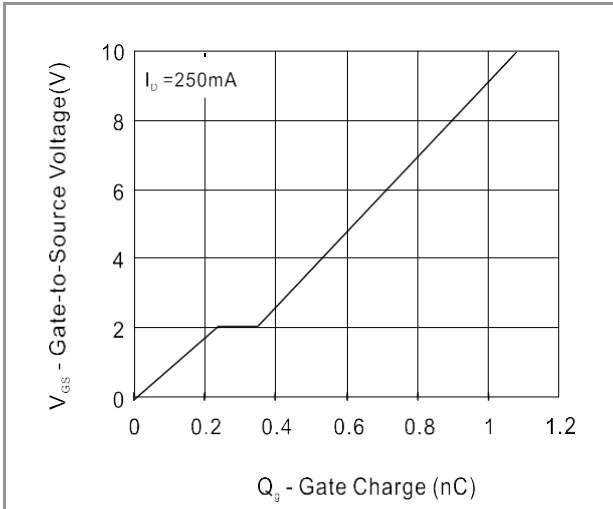


Fig.6 - Gate Charge Waveform

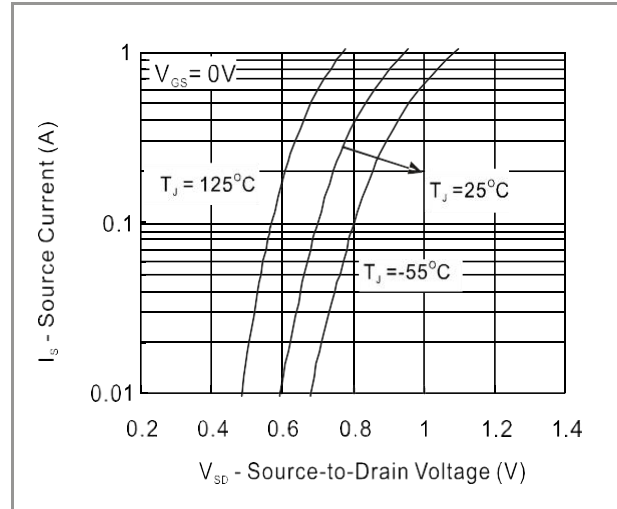


Fig.7 Source-Drain Diode Forward Voltage

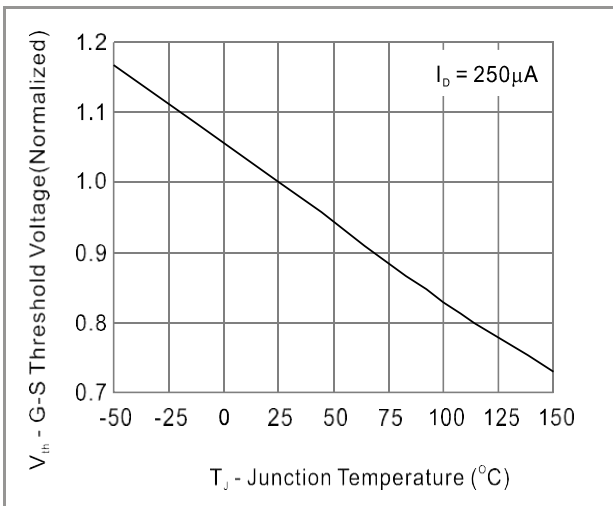


Fig.8 - Threshold Voltage vs Temperature

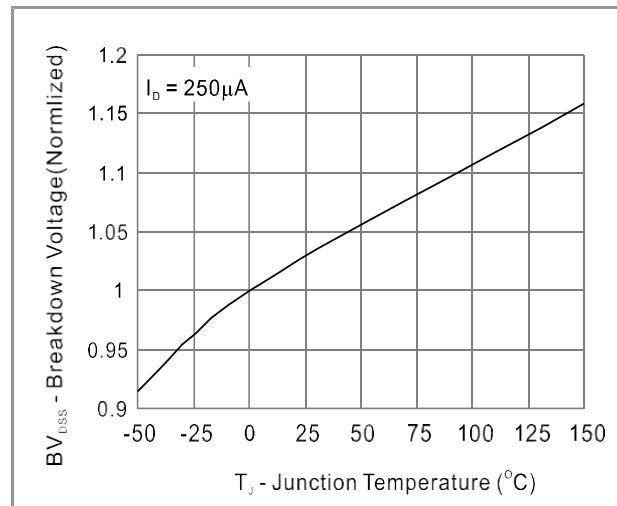


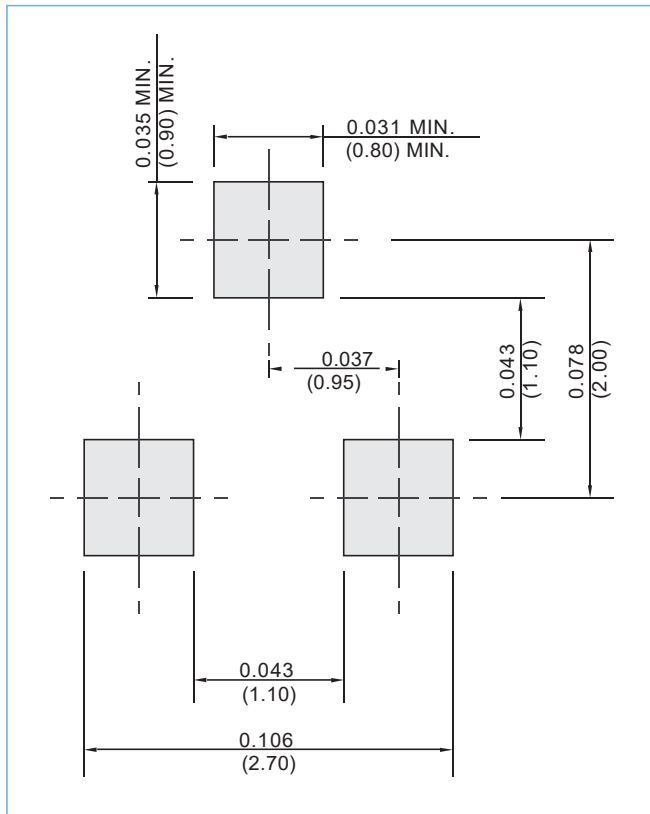
Fig.9 - Breakdown Voltage vs Junction Temperature

CSMSS138S23

MOUNTING PAD LAYOUT

SOT-23

Unit: inch(mm)



CSMSS138S23

Notice

Specifications of the products displayed herein are subject to change without notice. CCS or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in CCS terms and conditions of sale for such products, CCS assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of CCS products including liability or warranties relating to fitness for a particular purpose, merchant ability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications.

Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify CCS for any damages resulting from such improper use or sale.