

CSM620N4S89

60V N-Channel Enhancement Mode MOSFET

Voltage

60 V

Current

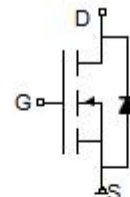
4 A

Features

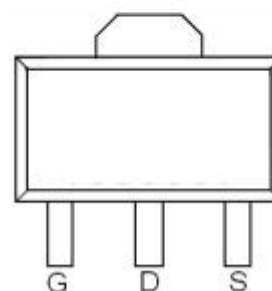
- $R_{DS(ON)}$, $V_{GS}@10V$, $I_D@5A < 65m\Omega$
- $R_{DS(ON)}$, $V_{GS}@4.5V$, $I_D@3A < 70m\Omega$
- High Power and current handling capability
- Lead free product is acquired
- Surface mount package

Mechanical Data

- Case: SOT-89-3L Package



Schematic diagram



SOT-89 -3L top view

Maximum Ratings and Thermal Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V _{DS}	60	V
Gate-Source Voltage		V _{GS}	±20	
Continuous Drain Current (Note 4)	T _A =25°C	I _D	4	A
Pulsed Drain Current (Note 1)		I _{DM}	16	
Power Dissipation	T _A =25°C	P _D	3.1	W
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55~150	°C
Typical Thermal Resistance		R _{θJA}	40.3	°C/W
- Junction to Ambient (Note 4,5)				

- Limited only By Maximum Junction Temperature

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Electrical Characteristics (T_A=25°C unless otherwise noted)

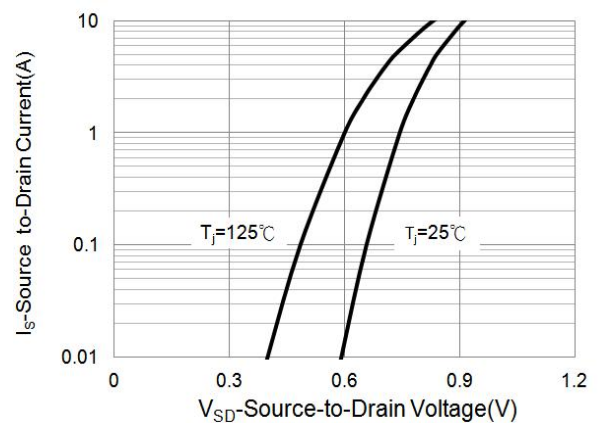
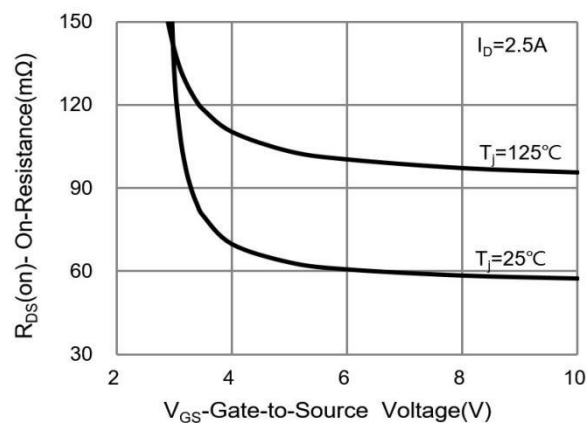
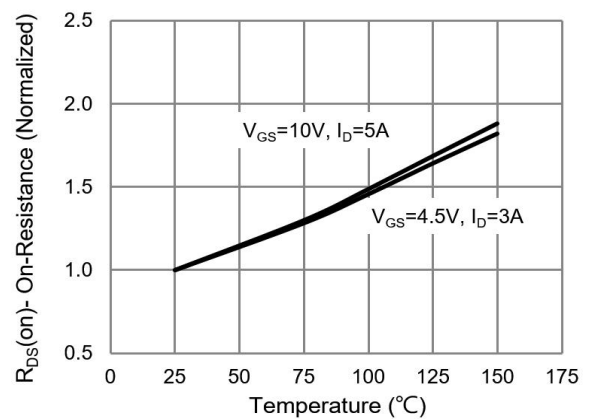
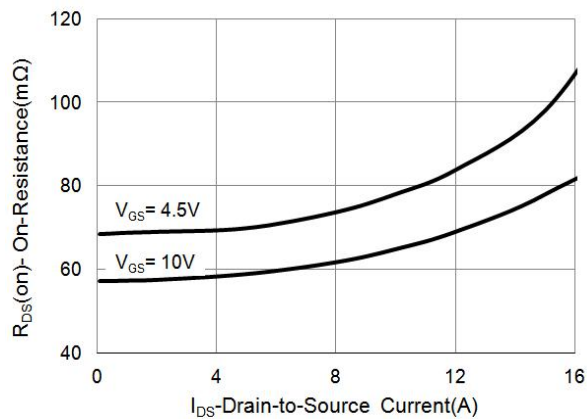
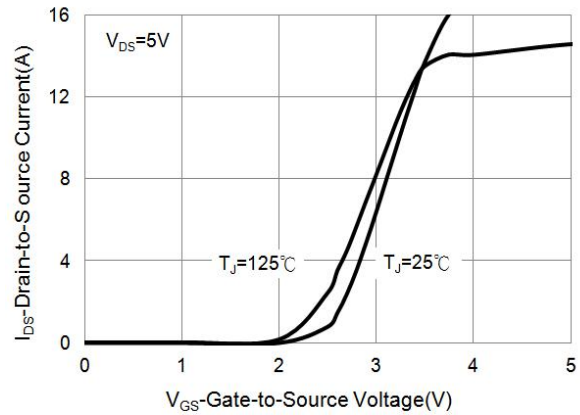
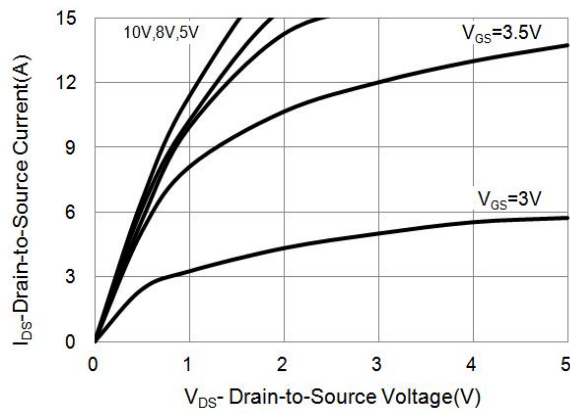
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	60	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	1	1.8	2.5	
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V, I _D =5A	-	53	65	mΩ
		V _{GS} =4.5V, I _D =3A	-	61	70	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V	-	-	1	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Dynamic <small>(Note 6)</small>						
Total Gate Charge	Q _g	V _{DS} =48V, I _D =3A, V _{GS} =10V <small>(Note 2,3)</small>	-	9.3	-	nC
Gate-Source Charge	Q _{gs}		-	2.2	-	
Gate-Drain Charge	Q _{gd}		-	1.9	-	
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHZ	-	509	-	pF
Output Capacitance	C _{oss}		-	47	-	
Reverse Transfer Capacitance	C _{rss}		-	23	-	
Turn-On Delay Time	td(on)	V _{DD} =30V, I _D =3A, V _{GS} =10V, R _G =3.3Ω <small>(Note 2,3)</small>	-	3.2	-	ns
Turn-On Rise Time	tr		-	9.7	-	
Turn-Off Delay Time	td(off)		-	18.5	-	
Turn-Off Fall Time	tf		-	6.4	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	Is	---	-	-	5	A
Diode Forward Voltage	VSD	Is=1A, VGS=0V	-	0.75	1	V

NOTES :

1. Pulse width≤300us, Duty cycle≤2%.
2. Essentially independent of operating temperature typical characteristics.
3. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=150°C. Ratings are based on low frequency and duty cycles to keep initial T_J=25°C.
4. The maximum current rating is package limited.
5. R_{θJA} is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. Mounted on a 1 inch² with 2oz.square pad of copper.
6. Guaranteed by design, not subject to production testing.

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TYPICAL CHARACTERISTIC CURVES



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TYPICAL CHARACTERISTIC CURVES

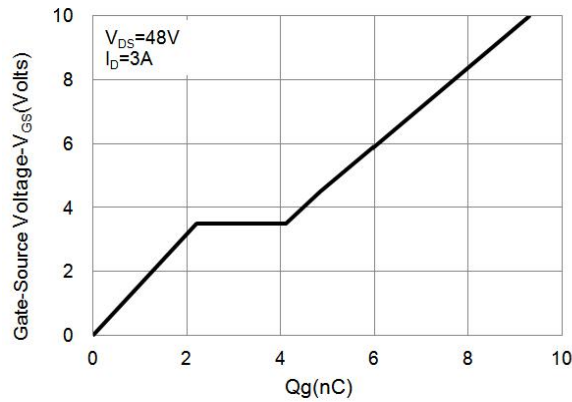


Fig.7 Gate-Charge Characteristics

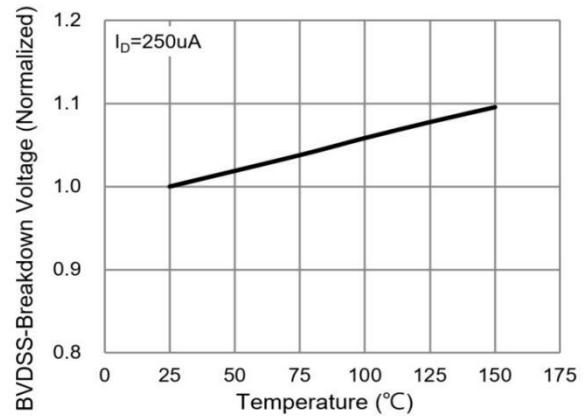


Fig.8 Breakdown Voltage Variation vs. Temperature

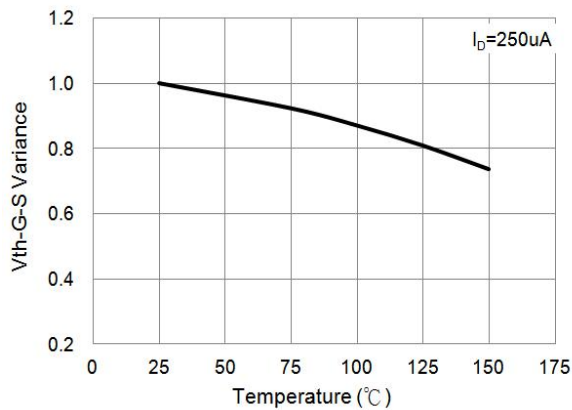


Fig.9 Threshold Voltage Variation with Temperature

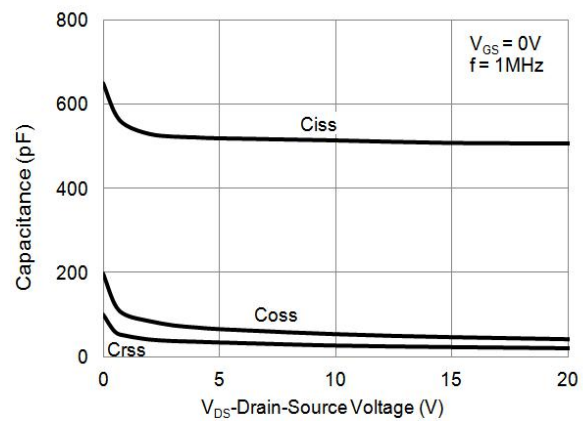


Fig.10 Capacitance vs. Drain-Source Voltage

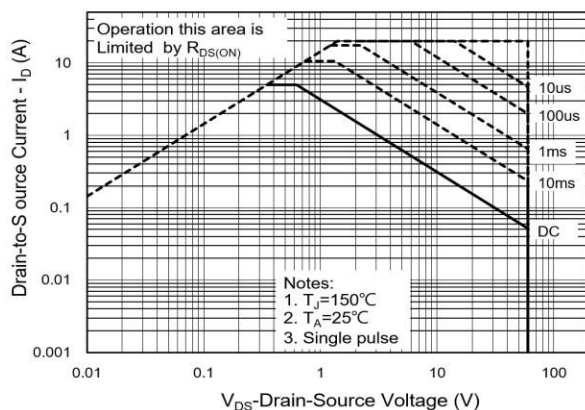


Fig.11 Maximum Safe Operating Area

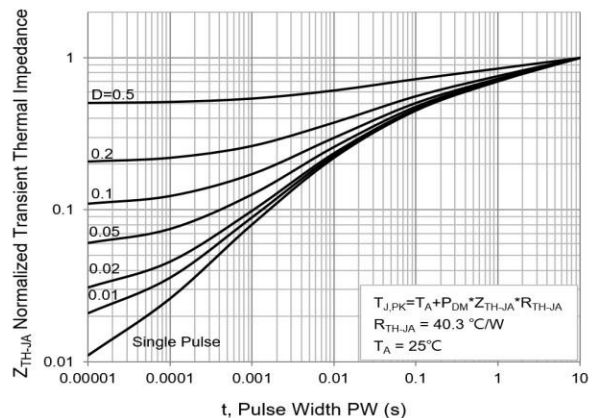


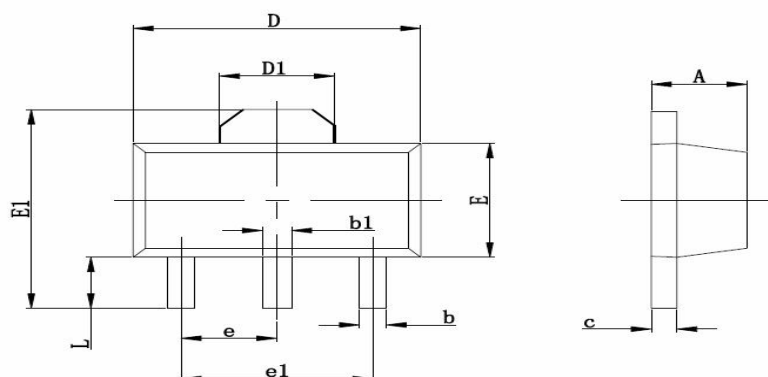
Fig.12 Normalized Transient Thermal Impedance

CSM620N4S89

Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type
CSM620N4S89	SOT-89-3L	1000pcs

Packaging Information & Mounting Pad Layout



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

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