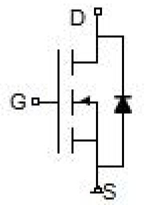
CSM320P5S89

30V P-Channel Enhancement Mode MOSFET

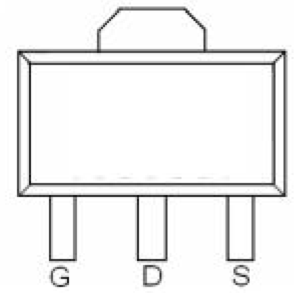
Voltage	-30 V	Current	-5 A

Features

- $R_{DS(ON)}$, V_{GS}@-10V, I_D@-3A<50mΩ
- $R_{DS(ON)}$, V_{GS}@-4.5V, I_D@-2A<70mΩ
- High switching speed
- Improved dv/dt capability
- Low Gate Charge
- Low reverse transfer capacitance



Schematic diagram



SOT-89 -3L top view

Mechanical Data

- Case: SOT-89-3L Package

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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V_{DS}	-30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current	T_A=25°C	I_D	-5	A
	T_A=70°C		-4	
Pulsed Drain Current (Note 1)		I_{DM}	-20	
Power Dissipation	T_A=25°C	P_D	2.1	W
	T_A=70°C		1.3	
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-55~150	°C
Typical Thermal Resistance - Junction to Ambient (Note 5)		$R_{\theta JA}$	59.5	°C/W

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	-30	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250uA	-1	-1.6	-2.5	
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=-10V, I_D=-3A	-	40	50	mΩ
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS}=-4.5V, I_D=-2A	-	60	70	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V, V_{GS}=0V	-	-	-1	uA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Dynamic (Note 6)						
Total Gate Charge	Q_g	V_{DS}=-15V, I_D=-3A, V_{GS}=-4.5V (Note 1,2)	-	4.8	-	nC
Gate-Source Charge	Q_{gs}		-	1.7	-	
Gate-Drain Charge	Q_{gd}		-	1.7	-	
Input Capacitance	Ciss	V_{DS}=-15V, V_{GS}=0V, f=1.0MHZ	-	516	-	pF
Output Capacitance	Coss		-	83	-	
Reverse Transfer Capacitance	Crss		-	61	-	
Turn-On Delay Time	$t_{d(on)}$	V_{DS}=-15V, I_D=-1A, V_{GEN}=-10V, R_G=6Ω (Note 1,2)	-	5.6	-	ns
Turn-On Rise Time	tr		-	8.5	-	
Turn-Off Delay Time	$t_{d(off)}$		-	27	-	
Turn-Off Fall Time	tf		-	18	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I_S	---	-	-	-5	A
Diode Forward Voltage	V_{SD}	I_S=-1A, V_{GS}=0V	-	-0.76	-1	V

NOTES :

1. Pulse width≤300us, Duty cycle≤2%
2. Essentially independent of operating temperature typical characteristics.
3. The maximum current rating is package limited.
4. 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.
5. $R_{\Theta JA}$ 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 inch^2 with 2oz.square pad of copper.
6. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTIC CURVES

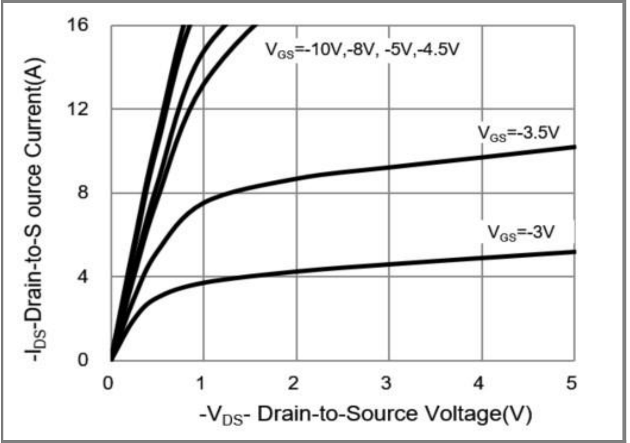


Fig.1 On-Region Characteristics

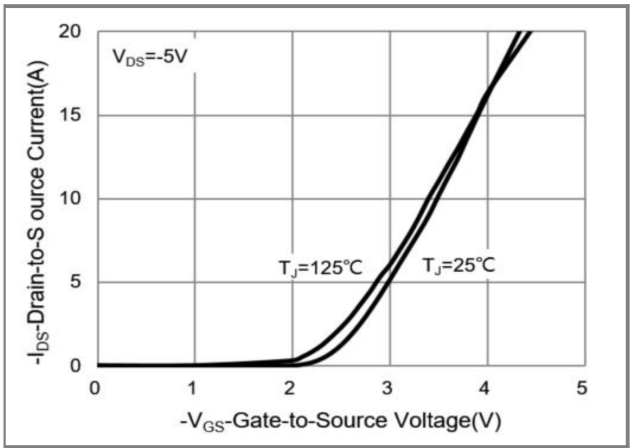


Fig.2 Transfer Characteristics

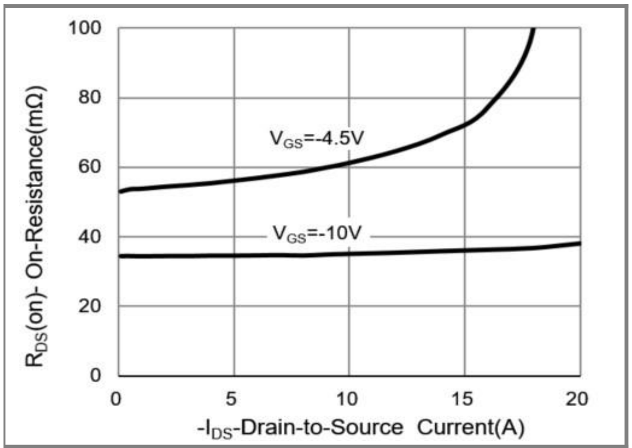


Fig.3 On-Resistance vs. Drain Current

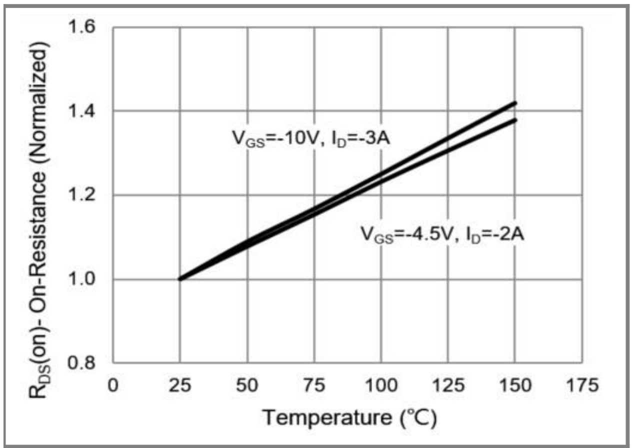


Fig.4 On-Resistance vs. Junction temperature

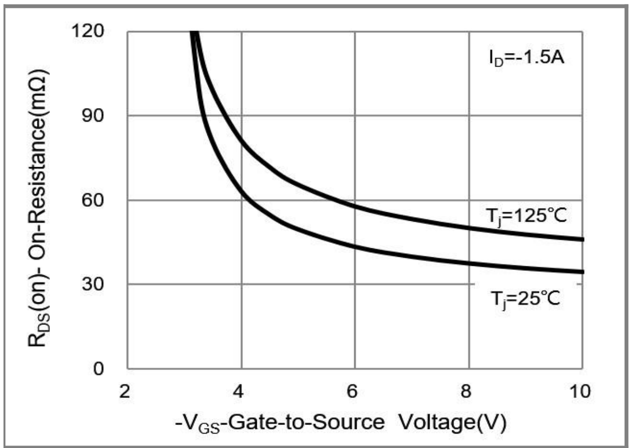


Fig.5 On-Resistance Variation with V_{GS}

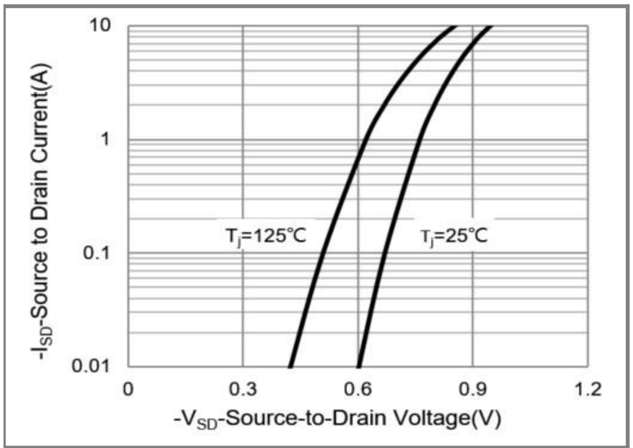


Fig.6 Body Diode Characteristics

TYPICAL CHARACTERISTIC CURVES

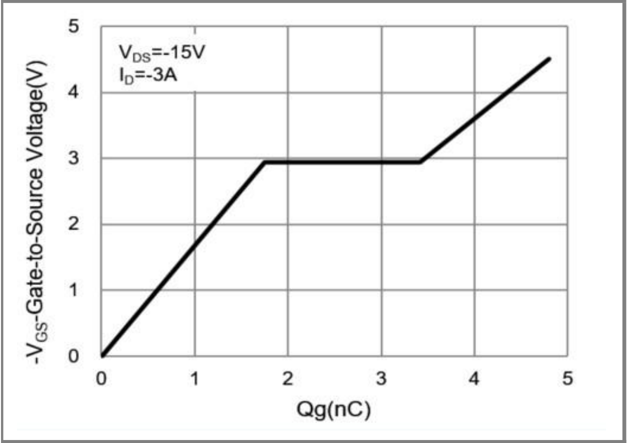


Fig.7 Gate-Charge Characteristics

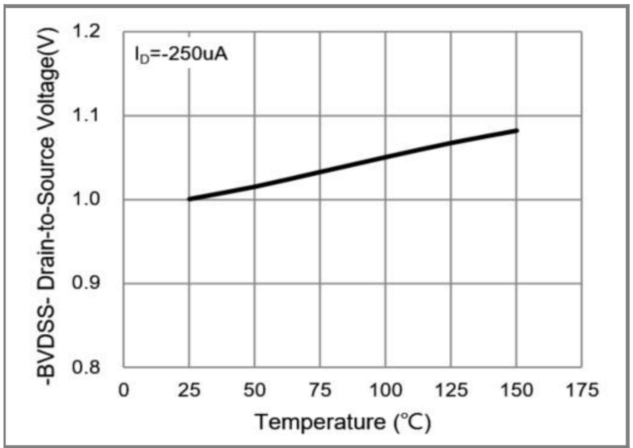


Fig.8 Breakdown Voltage Variation vs. Temperature

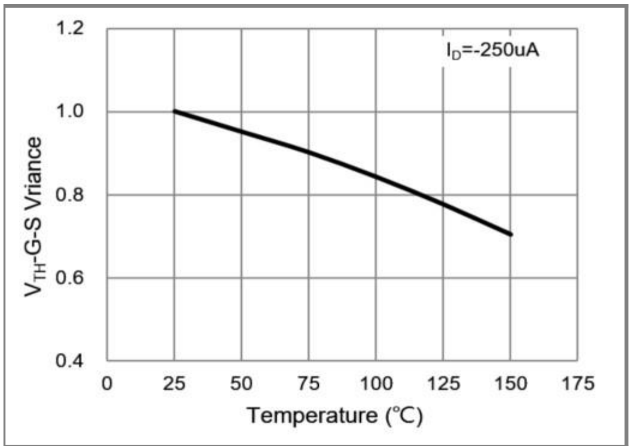


Fig.9 Threshold Voltage Variation with Temperature

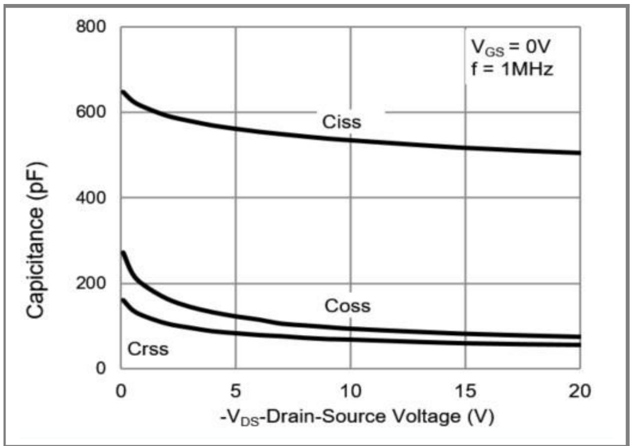


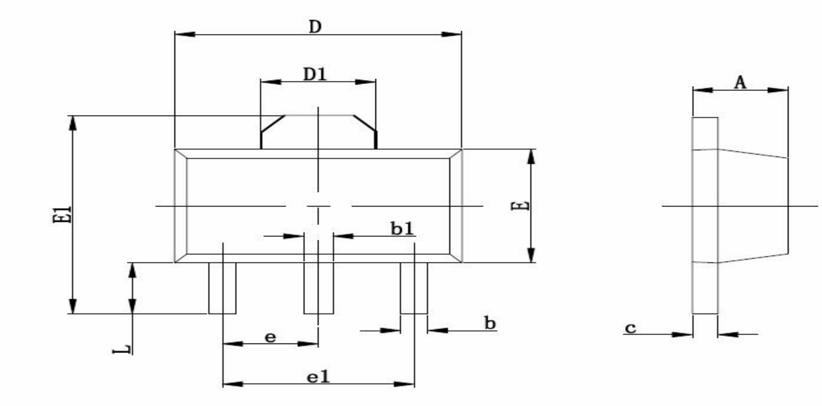
Fig.10 Capacitance vs. Drain-Source Voltage

CSM320P5S89

Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type
CSM320P5S89	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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