

## CSM320P5SOP8

### 30V P-Channel Enhancement Mode MOSFET

**Voltage**

**-30 V**

**Current**

**-5 A**

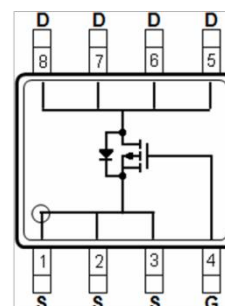
#### Features

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

#### Mechanical Data

- Case: SOP-8 Package
- Terminals: Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0029 ounces, 0.083 grams

SOP-8



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

PARAMETER		SYMBOL	LIMIT	UNITS
Drain-Source Voltage		V <sub>DS</sub>	-30	V
Gate-Source Voltage		V <sub>GS</sub>	±20	
Continuous Drain Current	T <sub>A</sub> =25°C	I <sub>D</sub>	-5	A
	T <sub>A</sub> =70°C		-4	
Pulsed Drain Current (Note 1)		I <sub>DM</sub>	-20	
Power Dissipation	T <sub>A</sub> =25°C	P <sub>D</sub>	2.1	W
	T <sub>A</sub> =70°C		1.3	
Operating Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55~150	°C
Typical Thermal Resistance		R <sub>θJA</sub>	59.5	°C/W
- Junction to Ambient (Note 5)				

## CSM320P5SOP8

### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
Static						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	-30	-	-	V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-1	-1.6	-2.5	
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-3A	-	40	50	mΩ
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-2A	-	60	70	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V	-	-	-1	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±100	nA
Dynamic (Note 6)						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-15V, I <sub>D</sub> =-3A, V <sub>GS</sub> =-4.5V (Note 1,2)	-	4.8	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	1.7	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	1.7	-	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V, f=1.0MHZ	-	516	-	pF
Output Capacitance	C <sub>oss</sub>		-	83	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	61	-	
Turn-On Delay Time	td <sub>(on)</sub>	V <sub>DS</sub> =-15V, I <sub>D</sub> =-1A, V <sub>GEN</sub> =-10V, R <sub>G</sub> =6Ω (Note 1,2)	-	5.6	-	ns
Turn-On Rise Time	tr		-	8.5	-	
Turn-Off Delay Time	td <sub>(off)</sub>		-	27	-	
Turn-Off Fall Time	tf		-	18	-	
Drain-Source Diode						
Maximum Continuous Drain-Source Diode Forward Current	I <sub>s</sub>	---	-	-	-5	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>s</sub> =-1A, V <sub>GS</sub> =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<sub>J(MAX)</sub>=150°C. Ratings are based on low frequency and duty cycles to keep initial T<sub>J</sub>=25°C.
5. R<sub>θJA</sub> 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<sup>2</sup> with 2oz.square pad of copper.
6. Guaranteed by design, not subject to production testing.

## CSM320P5SOP8

### TYPICAL CHARACTERISTIC CURVES

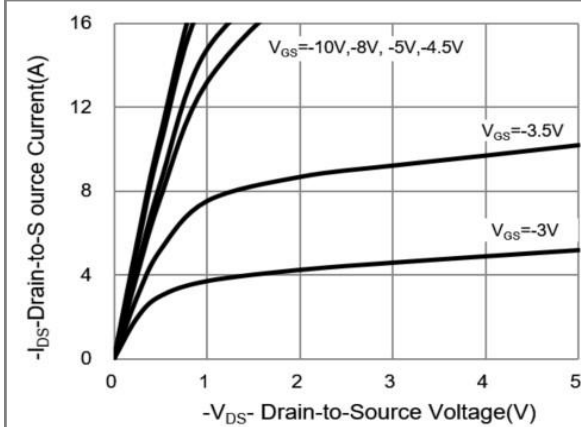


Fig.1 On-Region Characteristics

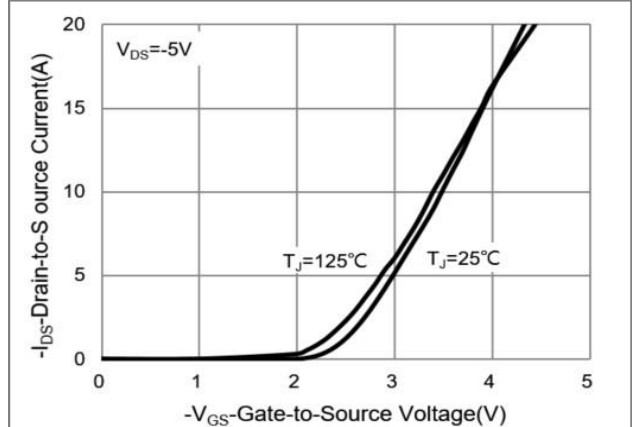


Fig.2 Transfer Characteristics

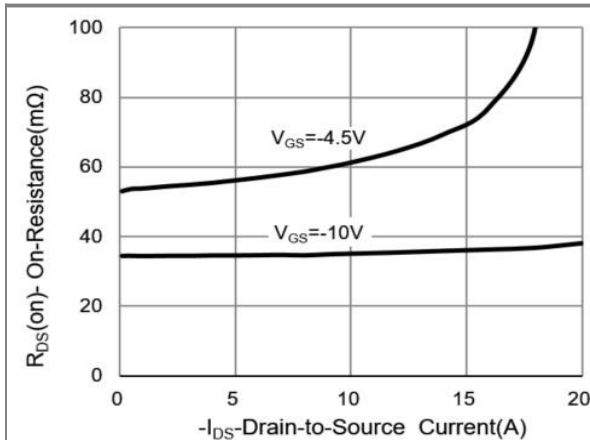


Fig.3 On-Resistance vs. Drain Current

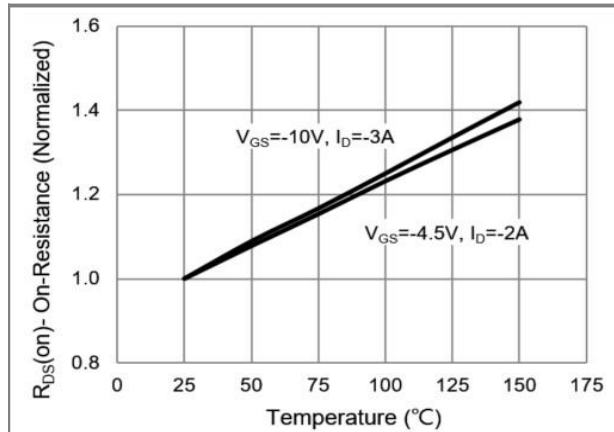


Fig.4 On-Resistance vs. Junction temperature

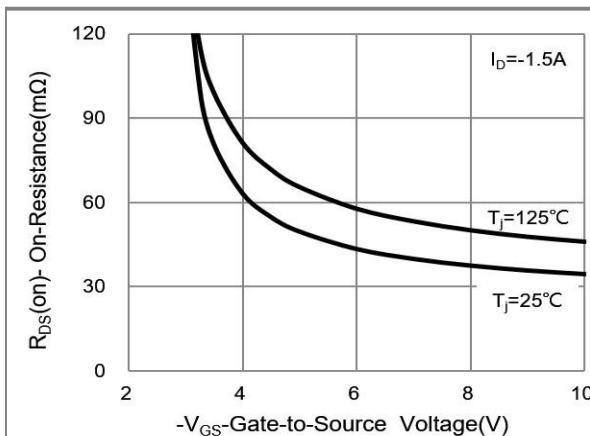


Fig.5 On-Resistance Variation with  $V_{GS}$

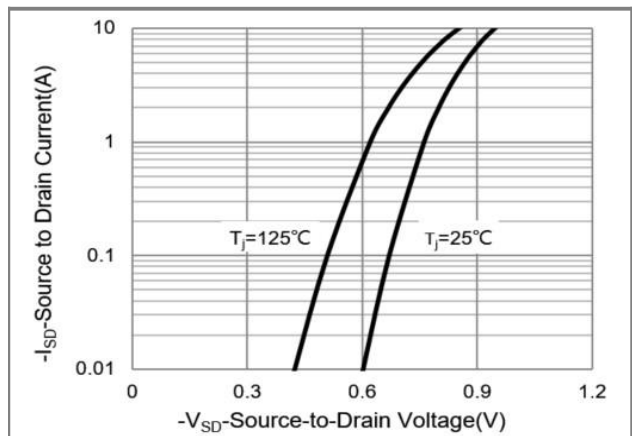


Fig.6 Body Diode Characteristics

## CSM320P5SOP8

### TYPICAL CHARACTERISTIC CURVES

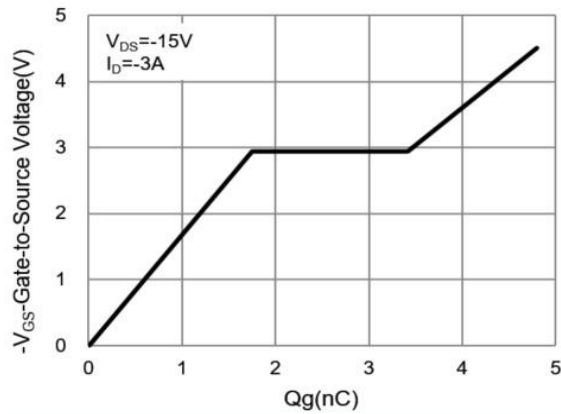


Fig.7 Gate-Charge Characteristics

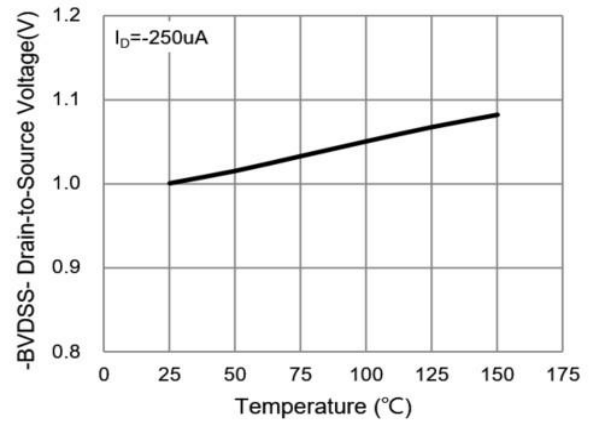


Fig.8 Breakdown Voltage Variation vs. Temperature

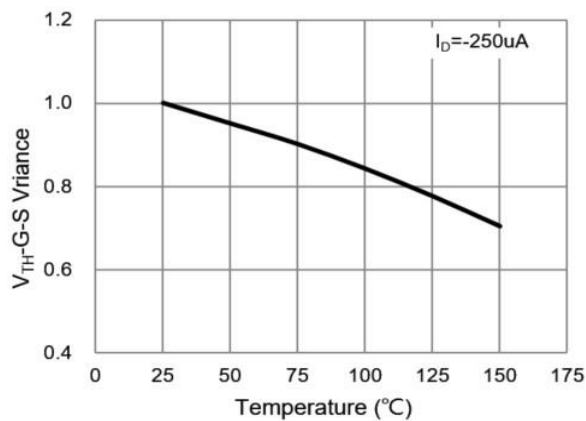


Fig.9 Threshold Voltage Variation with Temperature

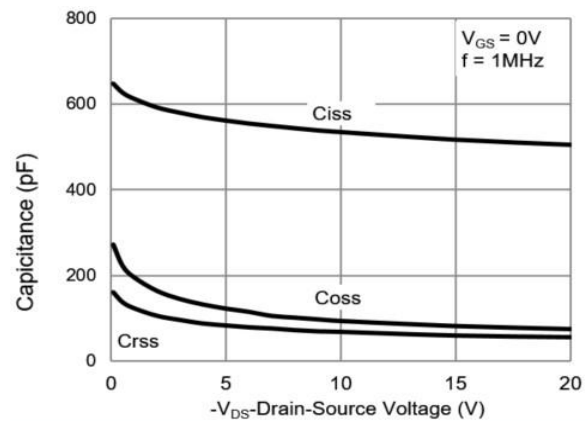


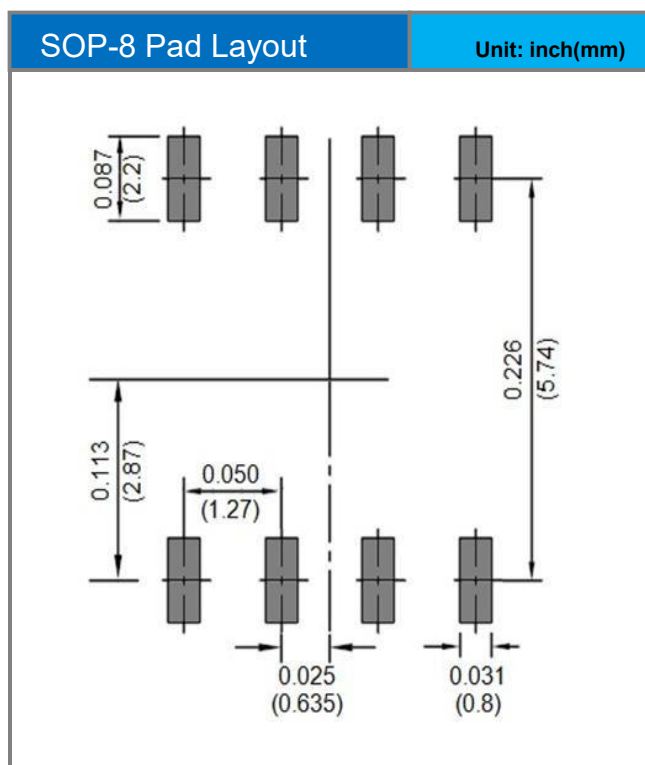
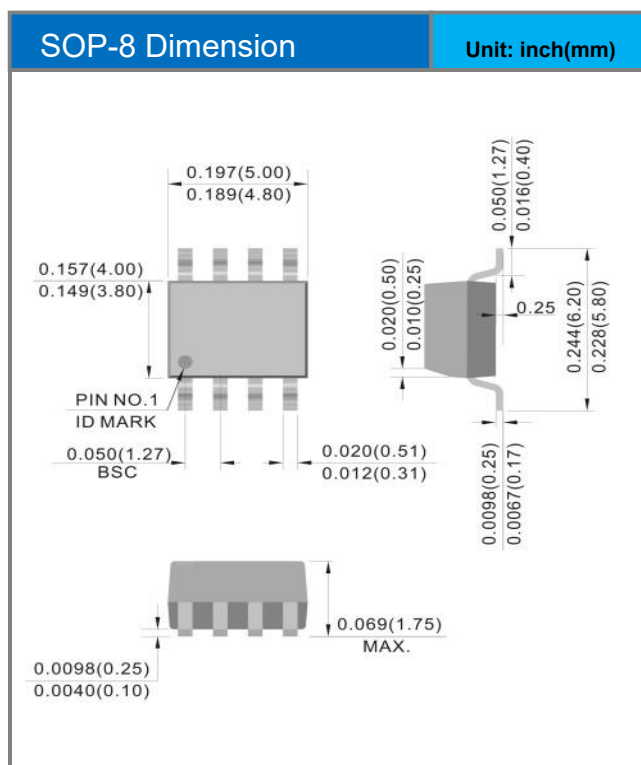
Fig.10 Capacitance vs. Drain-Source Voltage

## CSM320P5SOP8

Part No Packing Code Version

Part No Packing Code	Package Type	Packing Type
CSM320P5SOP8	SOP-8	2.5K pcs / 13" reel

### Packaging Information & Mounting Pad Layout



## **CSM320P5SOP8**

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