

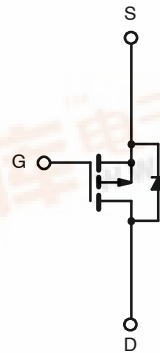
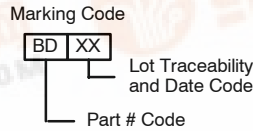
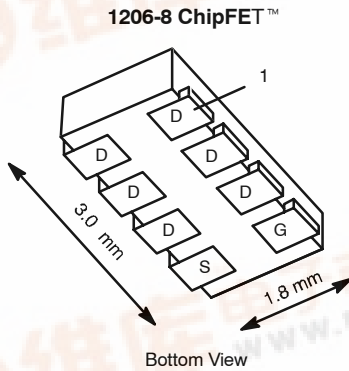


**Si5433DC**  
Vishay Siliconix

**P-Channel 20-V (D-S) MOSFET**

PRODUCT SUMMARY		
V <sub>DS</sub> (V)	r <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A)
-20	0.040 @ V <sub>GS</sub> = -4.5 V	-6.7
	0.052 @ V <sub>GS</sub> = -2.5 V	-5.9
	0.072 @ V <sub>GS</sub> = -1.8 V	-5.0

**TrenchFET<sup>®</sup>**  
Power MOSFETs  
1.8-V Rated



Ordering Information: Si5433DC-T1

ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25°C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	5 secs	Steady State	Unit
Drain-Source Voltage		V <sub>DS</sub>	-20		V
Gate-Source Voltage		V <sub>GS</sub>	±8		
Continuous Drain Current (T <sub>J</sub> = 150°C) <sup>a</sup>	T <sub>A</sub> = 25°C	I <sub>D</sub>	-6.7	-4.8	A
	T <sub>A</sub> = 85°C		-4.8	-3.5	
Pulsed Drain Current		I <sub>DM</sub>	-20		A
Continuous Source Current <sup>a</sup>		I <sub>S</sub>	-2.1	-1.1	
Maximum Power Dissipation <sup>a</sup>	T <sub>A</sub> = 25°C	P <sub>D</sub>	2.5	1.3	W
	T <sub>A</sub> = 85°C		1.3	0.7	
Operating Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>stg</sub>	-55 to 150		°C
Soldering Recommendations (Peak Temperature) <sup>b, c</sup>			260		

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient <sup>a</sup>	t ≤ 5 sec	R <sub>thJA</sub>	40	50	°C/W
	Steady State		80	95	
Maximum Junction-to-Foot (Drain)		R <sub>thJF</sub>	15	20	°C/W

Notes

- a. Surface Mounted on 1" x 1" FR4 Board.
- b. See Reliability Manual for profile. The ChipFET is a leadless package. The end of the lead terminal is exposed copper (not plated) as a result of the singulation process in manufacturing. A solder fillet at the exposed copper tip cannot be guaranteed and is not required to ensure adequate bottom side solder interconnection.
- c. Rework Conditions: manual soldering with a soldering iron is not recommended for leadless components.

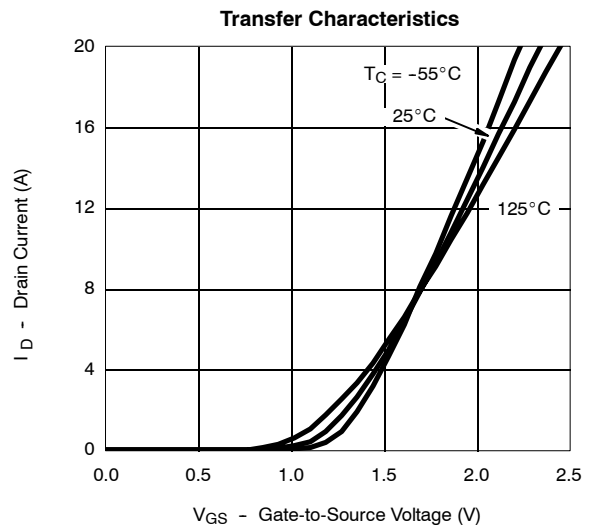
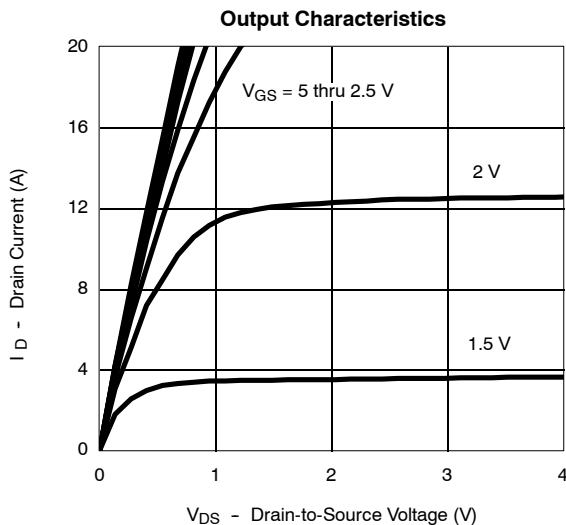


<b>SPECIFICATIONS (T<sub>J</sub> = 25 °C UNLESS OTHERWISE NOTED)</b>						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = -250 μA	-0.45			V
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ± 8 V			± 100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -16 V, V <sub>GS</sub> = 0 V			-1	μA
		V <sub>DS</sub> = -16 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 85 °C			-5	
On-State Drain Current <sup>a</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> ≤ -5 V, V <sub>GS</sub> = -4.5 V	-20			A
Drain-Source On-State Resistance <sup>a</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -4.8 A		0.036	0.040	Ω
		V <sub>GS</sub> = -2.5 V, I <sub>D</sub> = -4.2 A		0.045	0.052	
		V <sub>GS</sub> = -1.8 V, I <sub>D</sub> = -1 A		0.062	0.072	
Forward Transconductance <sup>a</sup>	g <sub>fs</sub>	V <sub>DS</sub> = -10 V, I <sub>D</sub> = -4.8 A		15		S
Diode Forward Voltage <sup>a</sup>	V <sub>SD</sub>	I <sub>S</sub> = -1.1 A, V <sub>GS</sub> = 0 V		-0.8	-1.2	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = -10 V, V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -4.8 A		15	22	nC
Gate-Source Charge	Q <sub>gs</sub>			3.6		
Gate-Drain Charge	Q <sub>gd</sub>			2.5		
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> = -10 V, R <sub>L</sub> = 10 Ω I <sub>D</sub> ≅ -1 A, V <sub>GEN</sub> = -4.5 V, R <sub>G</sub> = 6 Ω		22	35	ns
Rise Time	t <sub>r</sub>			29	45	
Turn-Off Delay Time	t <sub>d(off)</sub>			94	140	
Fall Time	t <sub>f</sub>			54	80	
Source-Drain Reverse Recovery Time	t <sub>rr</sub>		I <sub>F</sub> = -1.1 A, di/dt = 100 A/μs		30	

Notes

- a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

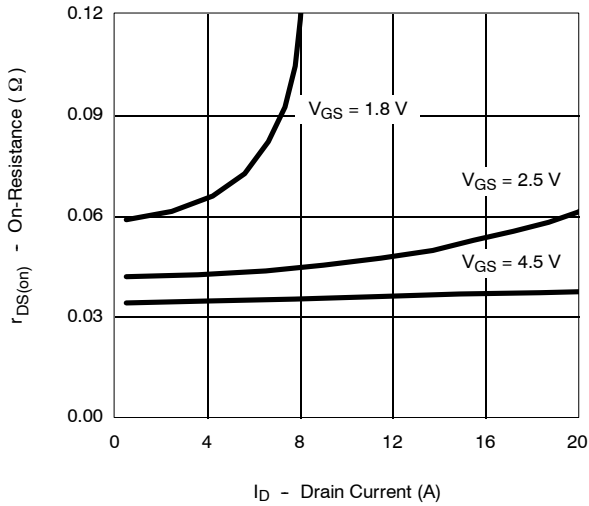
**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**



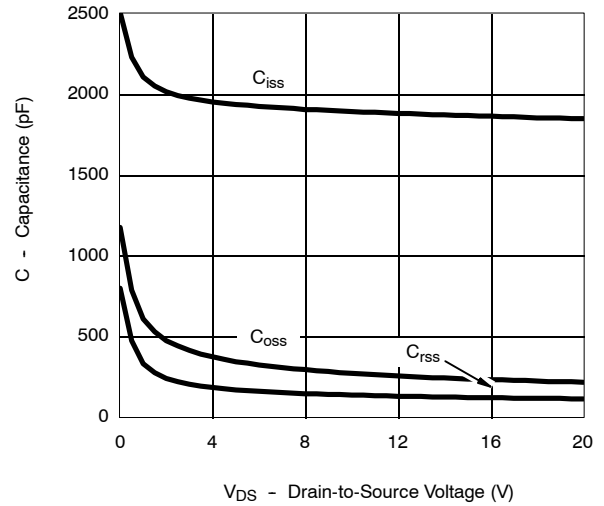


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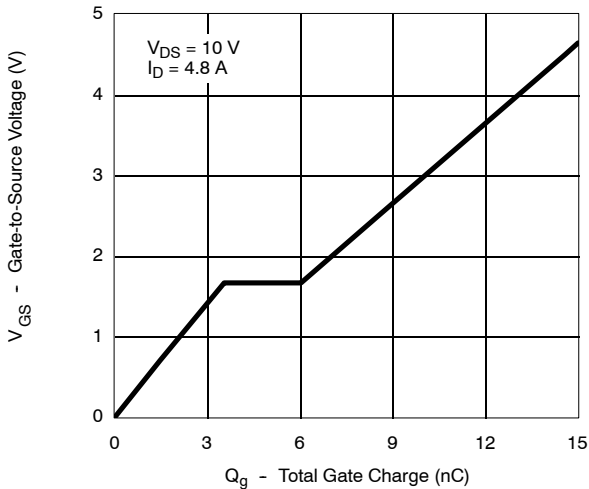
**On-Resistance vs. Drain Current**



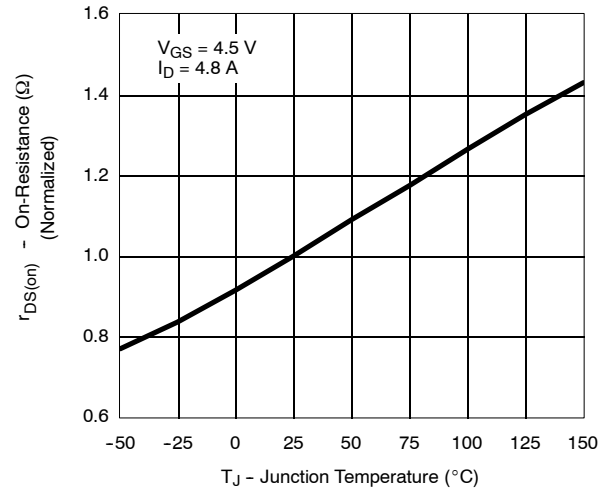
**Capacitance**



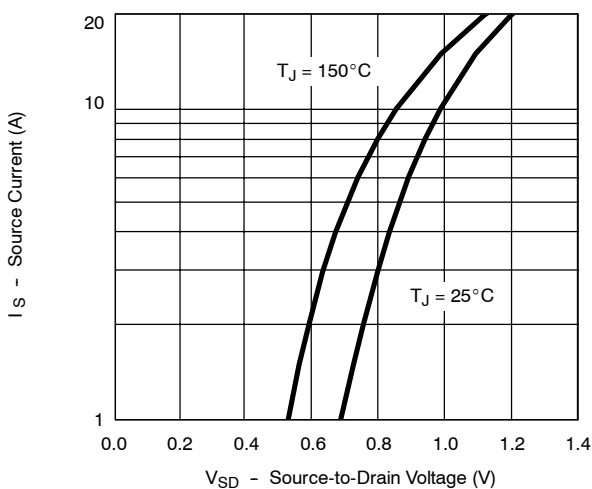
**Gate Charge**



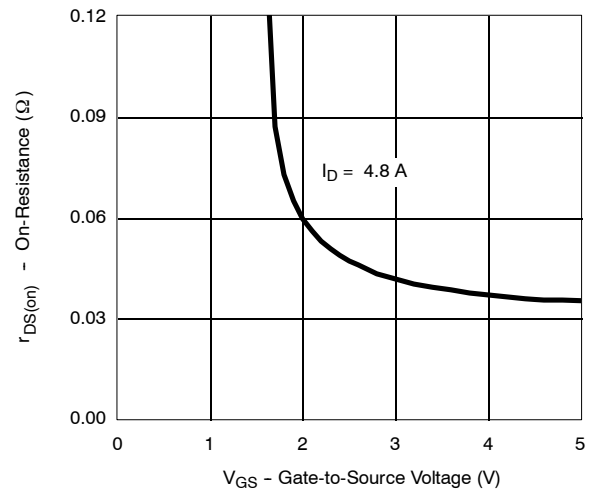
**On-Resistance vs. Junction Temperature**



**Source-Drain Diode Forward Voltage**



**On-Resistance vs. Gate-to-Source Voltage**





**TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)**

