



Si4405DY

Vishay Siliconix

P-Channel 30-V (D-S) MOSFET

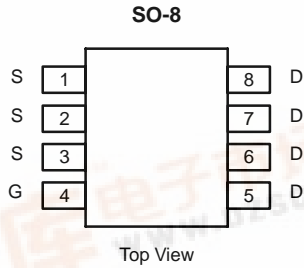
PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-30	0.0075 @ $V_{GS} = -10$ V	-17

FEATURES

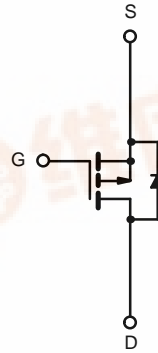
- TrenchFET® Power MOSFETS
- 100% R_g Tested

APPLICATIONS

- Battery and Load Switching
 - Notebook Computers
 - Notebook Battery Packs



Ordering Information: Si4405DY
Si4405DY-T1 (with Tape and Reel)



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)					
Parameter	Symbol	10 secs	Steady State	Unit	
Drain-Source Voltage	V_{DS}	-30		V	
Gate-Source Voltage	V_{GS}	± 20			
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a	I_D	$T_A = 25^\circ\text{C}$	-17	-11	A
		$T_A = 70^\circ\text{C}$	-13	-9	
Pulsed Drain Current	I_{DM}	-60		A	
continuous Source Current (Diode Conduction) ^a	I_S	-2.9	-1.30		
Maximum Power Dissipation ^a	P_D	$T_A = 25^\circ\text{C}$	3.5	1.6	W
		$T_A = 70^\circ\text{C}$	2.1	1.0	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150		$^\circ\text{C}$	

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient ^a	R_{thJA}	$t \leq 10$ sec	29	35	$^\circ\text{C/W}$
		Steady State	67	80	
Maximum Junction-to-Foot (Drain)	R_{thJF}	13	16		

Notes:
a. Surface Mounted on 1" x 1" FR4 Board.



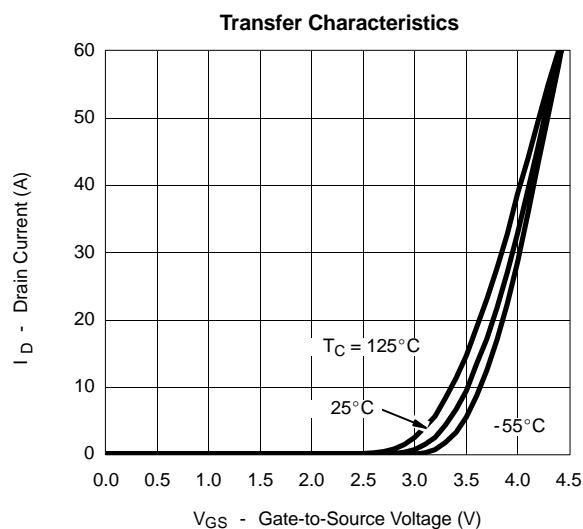
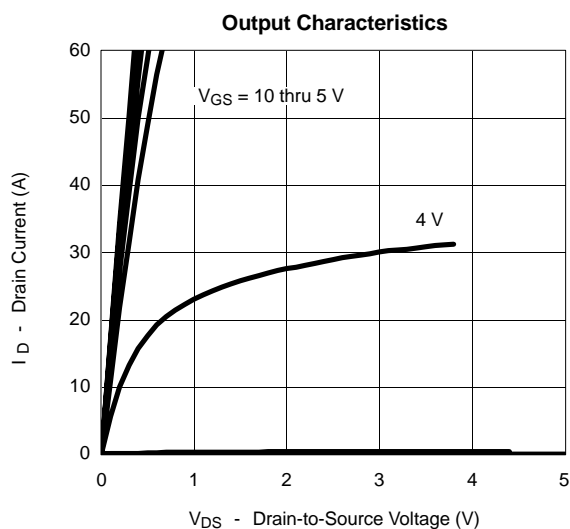
SPECIFICATIONS (T_J = 25 °C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 μA	-1.0		-3.0	V
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -24 V, V _{GS} = 0 V			-1	μA
		V _{DS} = -24 V, V _{GS} = 0 V, T _J = 70 °C			-10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} = -5 V, V _{GS} = -10 V	-30			A
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = -10 V, I _D = -17 A		0.006	0.0075	Ω
Forward Transconductance ^a	g _{fs}	V _{DS} = -15 V, I _D = -17 A		47		S
Diode Forward Voltage ^a	V _{SD}	I _S = -2.9 A, V _{GS} = 0 V		-0.75	-1.1	V
Dynamic^b						
Total Gate Charge	Q _g	V _{DS} = -15 V, V _{GS} = -10 V, I _D = -17 A		105	160	nC
Gate-Source Charge	Q _{gs}		17.5			
Gate-Drain Charge	Q _{gd}		29.5			
Gate Resistance	R _g		3	4	6.5	Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = -15 V, R _L = 15 Ω I _D ≅ -1 A, V _{GEN} = -10 V, R _G = 6 Ω		25	40	ns
Rise Time	t _r		15	25		
Turn-Off Delay Time	t _{d(off)}		190	285		
Fall Time	t _f		80	120		
Source-Drain Reverse Recovery Time	t _{rr}		I _F = -2.9 A, di/dt = 100 A/μs		70	

Notes

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

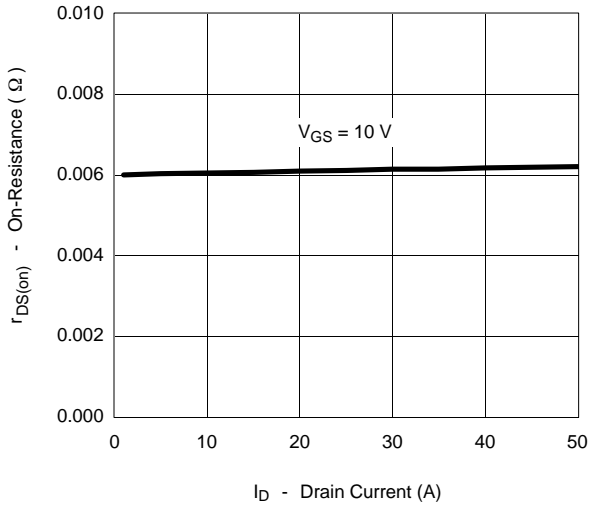
TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)



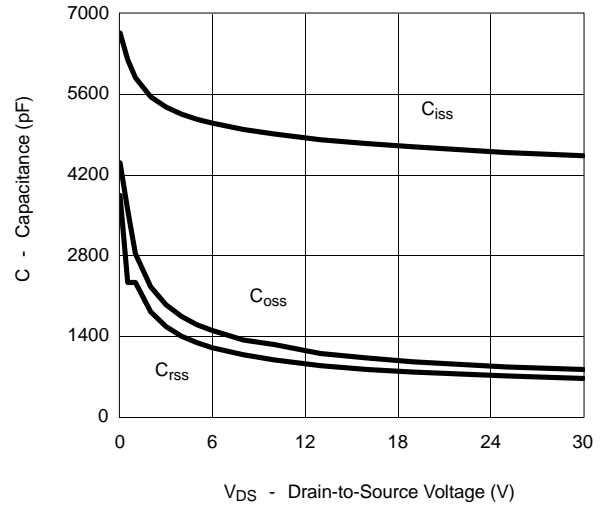


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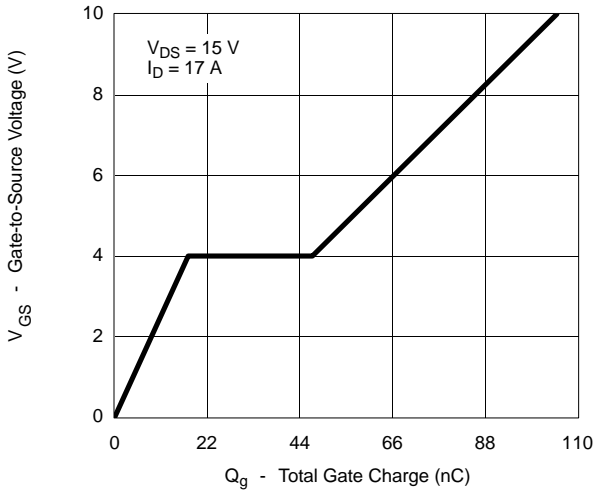
On-Resistance vs. Drain Current



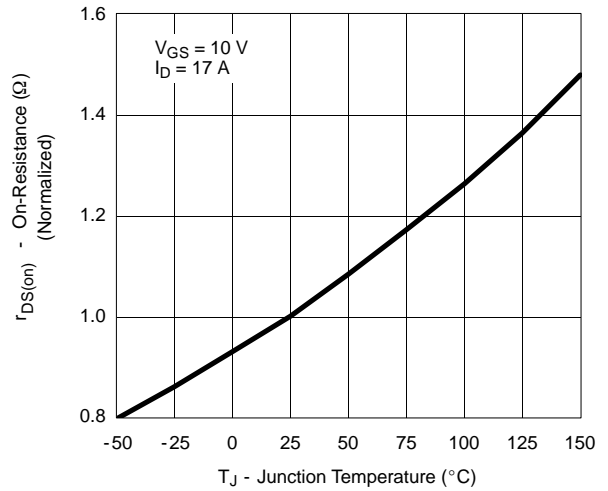
Capacitance



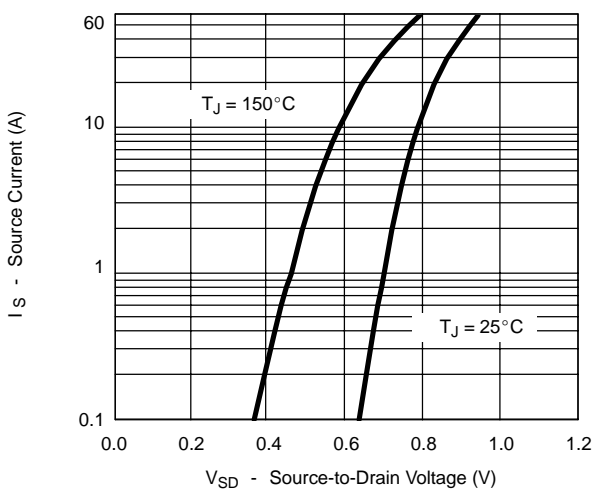
Gate Charge



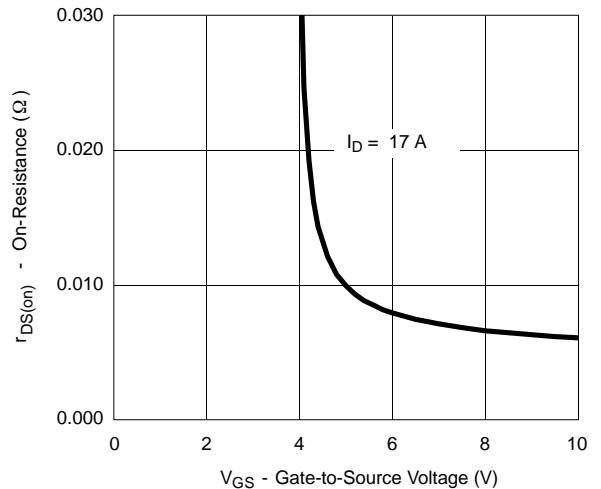
On-Resistance vs. Junction Temperature



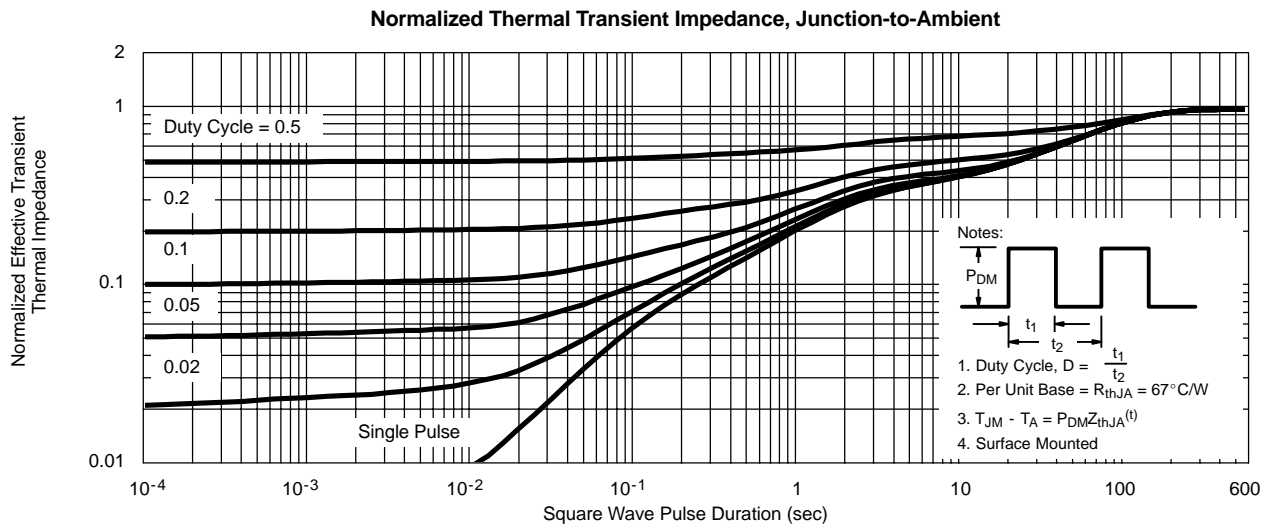
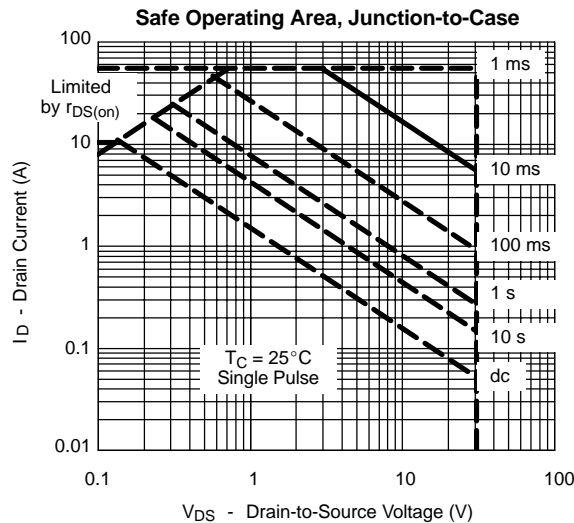
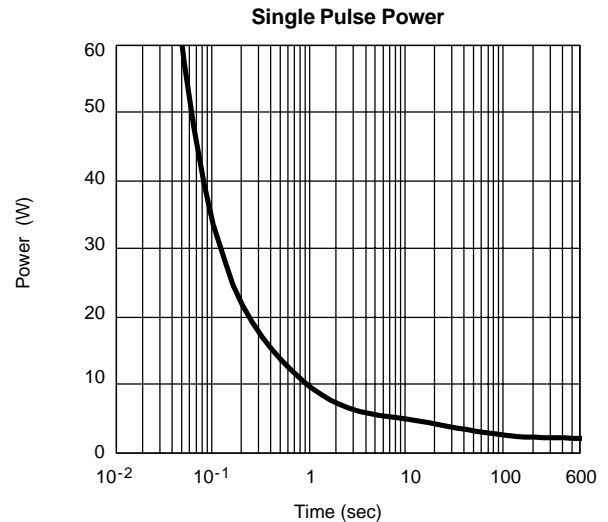
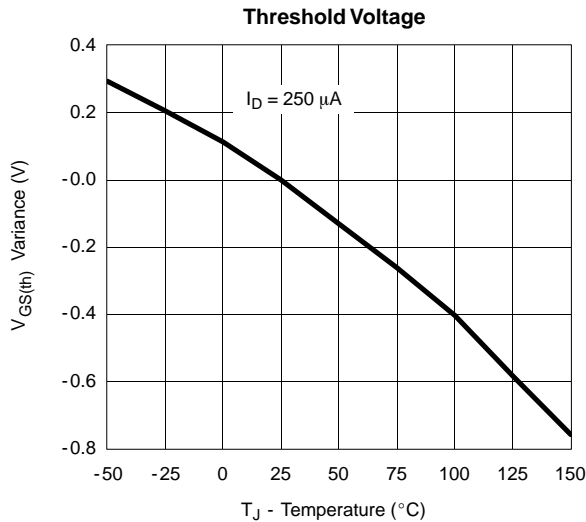
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)





TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

