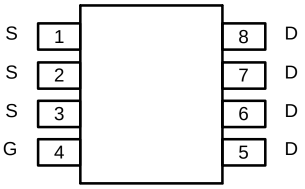
N-Channel 2.5-V (G-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
20	0.009 @ V_{GS} = 4.5 V	13.5
	0.013 @ V_{GS} = 2.5 V	11

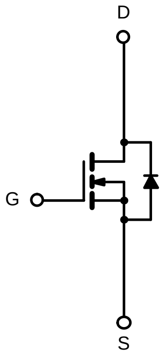
TrenchFET® Power MOSFETs

SO-8



Top View

Ordering Information: Si4466DY
Si4466DY-T1 (with Tape and Reel)



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)					
Parameter		**Symbol**	**10 sec**	**Steady State**	**Unit**
Drain-Source Voltage		V_{DS}	20		V
Gate-Source Voltage		V_{GS}	±12		
Continuous Drain Current (T_J = 150°C)[a]	T_A = 25°C	I_D	13.5	9.5	A
	T_A = 70°C		10.5	7.5	
Pulsed Drain Current		I_{DM}	50		
Continuous Source Current (Diode Conduction)[a]		I_S	2.7	1.36	
Maximum Power Dissipation[a]	T_A = 25°C	P_D	3.0	1.5	W
	T_A = 70°C		1.9	0.95	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS					
Parameter		**Symbol**	**Typical**	**Maximum**	**Unit**
Maximum Junction-to-Ambient[a]	t < 10 sec	R_{thJA}	33	42	°C/W
	Steady State		70	84	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	16	21	

Notes
a. Surface Mounted on FR4 Board, t ≤ 10 sec.

For SPICE model information via the Worldwide Web: http://www.vishay.com/www/product/spice.htm

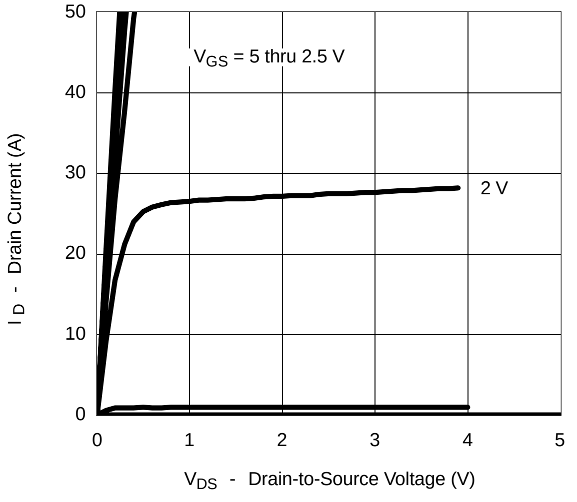
SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250 µA	0.6	1.0	1.4	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 12 V			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 16 V, V_{GS} = 0 V			1	µA
		V_{DS} = 16 V, V_{GS} = 0 V, T_J = 55°C			5	
On-State Drain Current[a]	$I_{D(on)}$	$V_{DS} \geq$ 5 V, V_{GS} = 4.5 V	30			A
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	V_{GS} = 4.5 V, I_D =13.5 A		0.0055	0.009	Ω
		V_{GS} = 2.5 V, I_D = 11 A		0.0078	0.013	
Forward Transconductance[a]	g_{fs}	V_{DS} = 10 V, I_D = 13.5 A		70		S
Diode Forward Voltage[a]	V_{SD}	I_S = 2.7 A, V_{GS} = 0 V		0.70	1.1	V
Dynamic[b]						
Gate Charge	Q_g	V_{DS} = 10 V, V_{GS} = 4.5 V, I_D = 13.5 A		40	60	nC
Gate-Source Charge	Q_{gs}			7		
Gate-Drain Charge	Q_{gd}			12		
Gate Resistance	R_G		0.5	1.9	3.3	Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 10 V, R_L = 10 Ω $I_D \cong$ 1 A, V_{GEN} = 10 V, R_G = 6 Ω		20	30	ns
Rise Time	t_r			15	25	
Turn-Off Delay Time	$t_{d(off)}$			150	250	
Fall Time	t_f			70	110	
Source-Drain Reverse Recovery Time	t_{rr}	I_F = 2.7 A, di/dt = 100 A/µs		55	90	

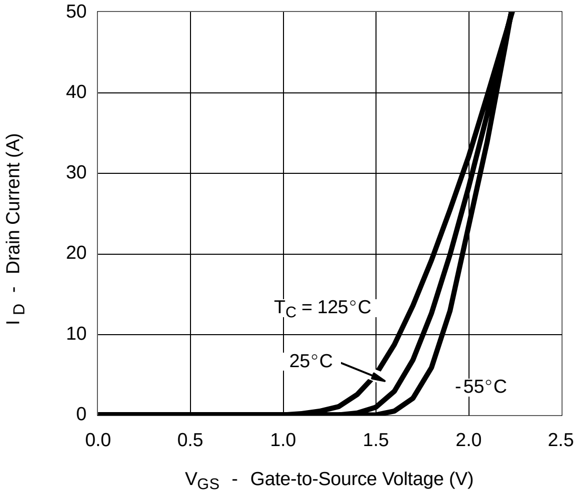
Notes
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

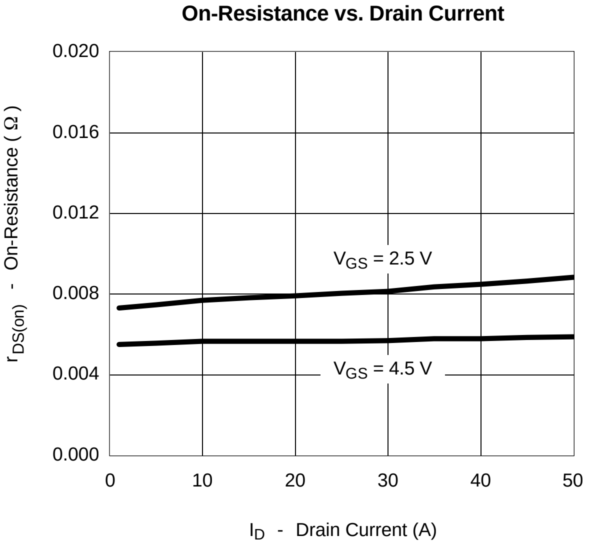
Output Characteristics

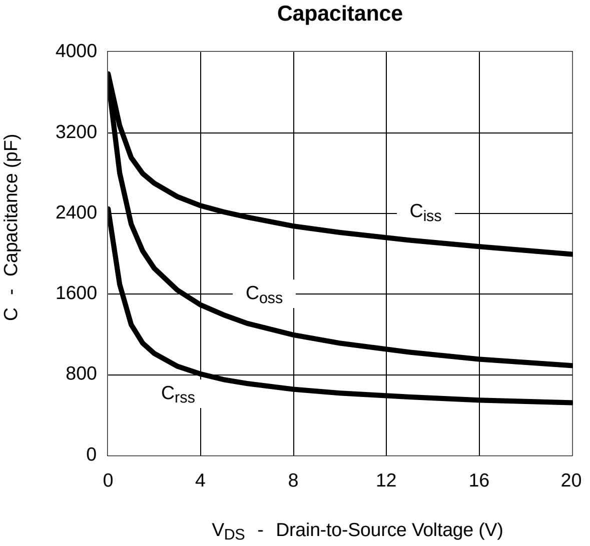


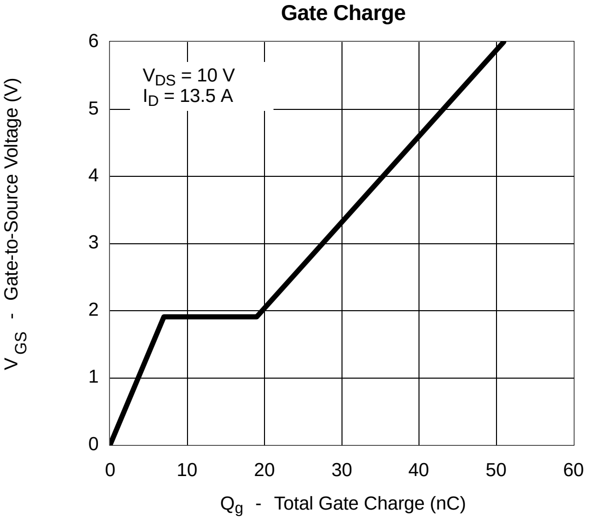
Transfer Characteristics

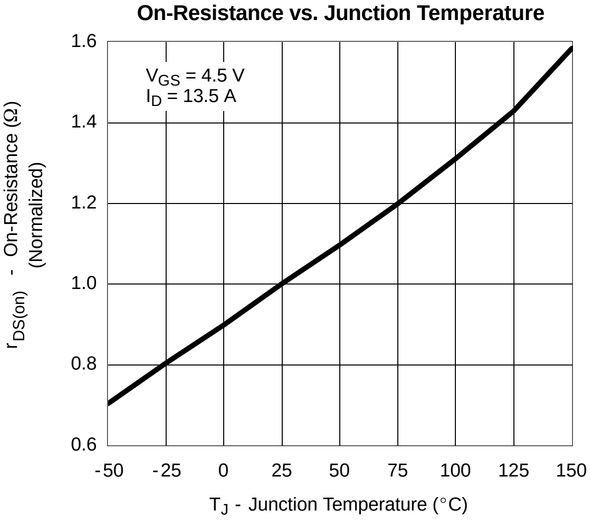


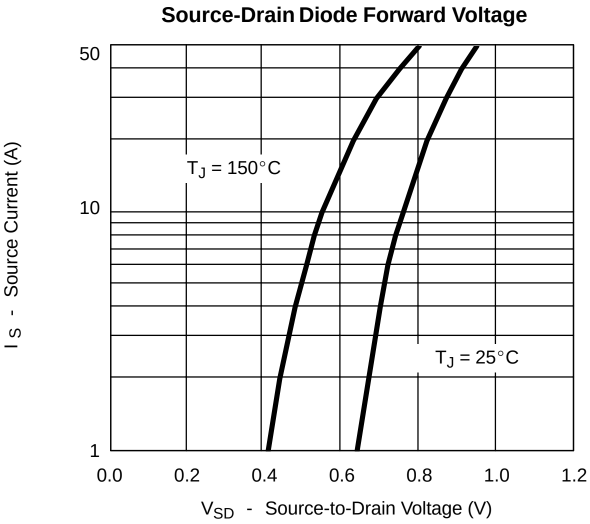
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

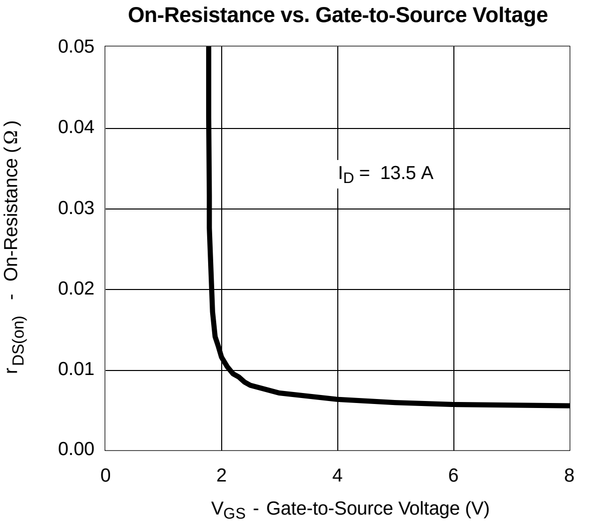






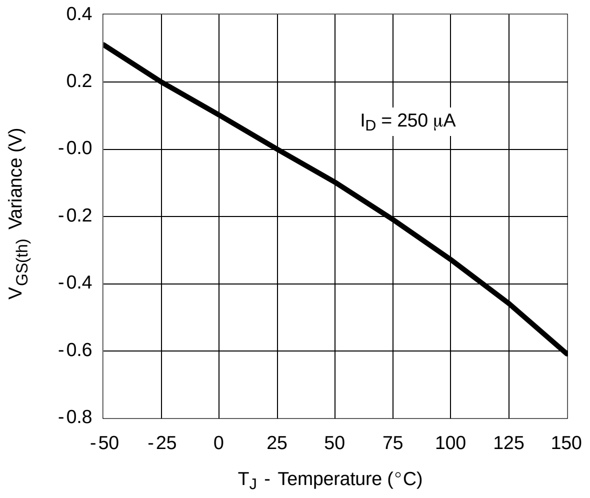




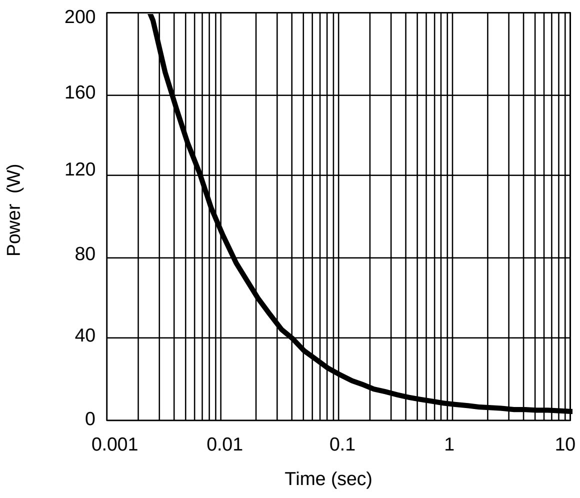


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

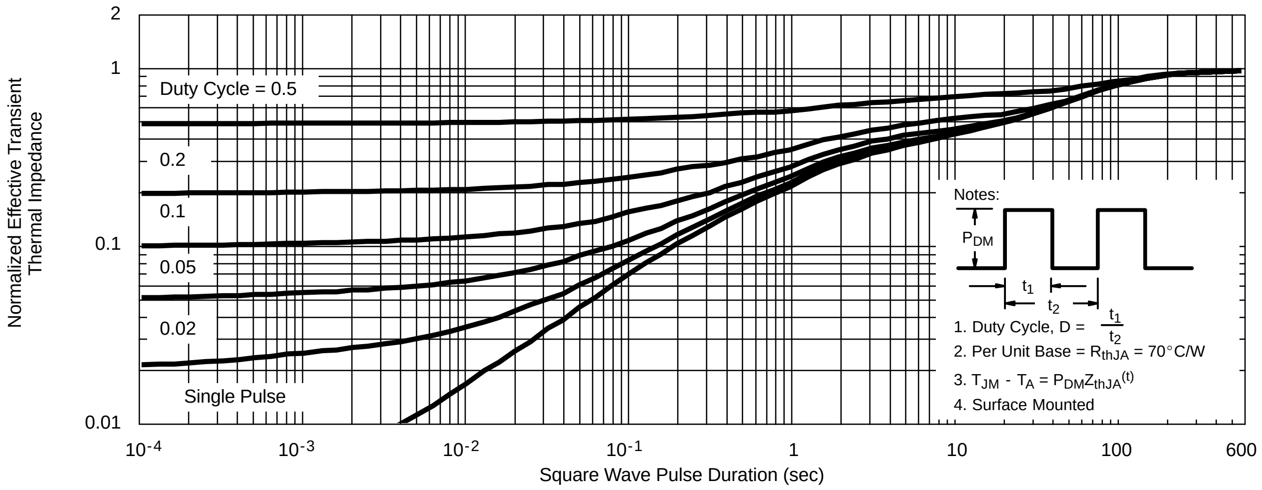
Threshold Voltage



Single Pulse Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient



Notes:

1. Duty Cycle, D = $\frac{t_1}{t_2}$
2. Per Unit Base = R_{thJA} = 70°C/W
3. $T_{JM} - T_A = P_{DM}Z_{thJA}^{(t)}$
4. Surface Mounted

Normalized Thermal Transient Impedance, Junction-to-Foot