

Dual P-Channel 8-V (D-S) MOSFET

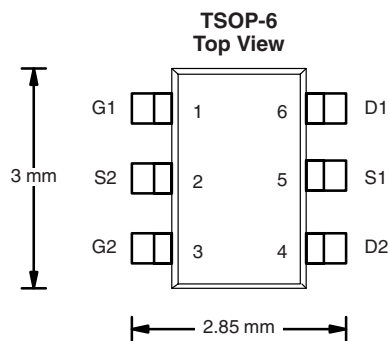
PRODUCT SUMMARY		
V _{DS} (V)	R _{DS(on)} (Ω)	I _D (A)
- 8	0.125 at V _{GS} = - 4.5 V	± 2.5
	0.175 at V _{GS} = - 2.5 V	± 2.0
	0.265 at V _{GS} = - 1.8 V	± 1.7

FEATURES

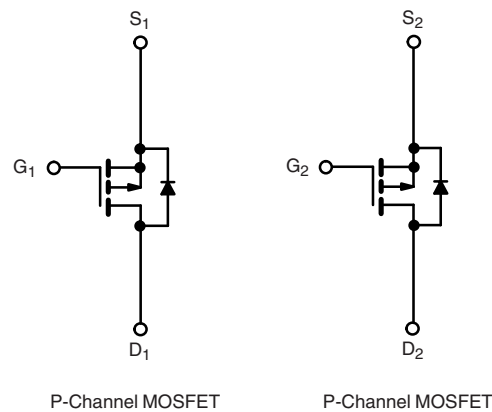
- Halogen-free According to IEC 61249-2-21 Definition
- TrenchFET® Power MOSFETs: 1.8 V Rated
- Compliant to RoHS Directive 2002/95/EC



RoHS
COMPLIANT
HALOGEN
FREE
Available



Ordering Information: Si3905DV-T1-E3 (Lead (Pb)-free)
Si3905DV-T1-GE3 (Lead (Pb)-free and Halogen-free)



ABSOLUTE MAXIMUM RATINGS T _A = 25 °C, unless otherwise noted				
Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V _{DS}	- 8	V	
Gate-Source Voltage	V _{GS}	± 8		
Continuous Drain Current (T _J = 150 °C) ^{a, b}	I _D	T _A = 25 °C	± 2.5	A
		T _A = 70 °C	± 2.0	
Pulsed Drain Current	I _{DM}	± 7		
Continuous Diode Current (Diode Conduction) ^{a, b}	I _S	- 1.05	W	
Maximum Power Dissipation ^{a, b}	P _D	T _A = 25 °C		1.15
		T _A = 70 °C	0.73	
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 ≤ 5 s	R _{thJA}	93	110	°C/W
	Steady State		130	150	
Maximum Junction-to-Lead	Steady State	R _{thJL}	75	90	

Notes:

- a. Surface Mounted on FR4 board.
b. t ≤ 5 s.

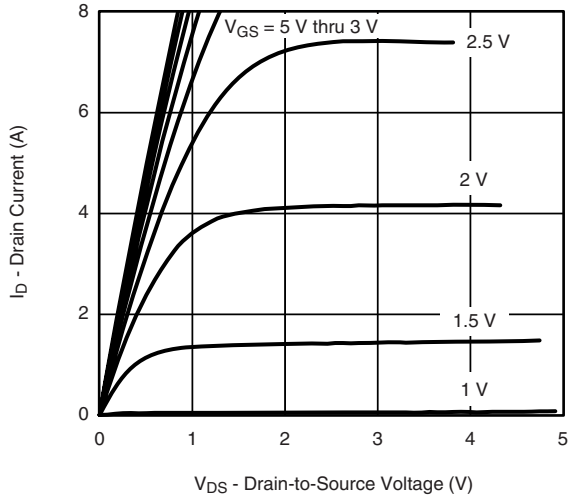
SPECIFICATIONS $T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\text{ }\mu\text{A}$	-0.45			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 8\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -6.4\text{ V}, V_{GS} = 0\text{ V}$			-1	μA
		$V_{DS} = -6.4\text{ V}, V_{GS} = 0\text{ V}, T_J = 55\text{ }^\circ\text{C}$			-5	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \leq -5\text{ V}, V_{GS} = -4.5\text{ V}$	-5			A
Drain-Source On-State Resistance ^a	$R_{DS(on)}$	$V_{GS} = -4.5\text{ V}, I_D = -2.5\text{ A}$		0.103	0.125	Ω
		$V_{GS} = -2.5\text{ V}, I_D = -2.0\text{ A}$		0.146	0.175	
		$V_{GS} = -1.8\text{ V}, I_D = -1\text{ A}$		0.205	0.265	
Forward Transconductance ^a	g_{fs}	$V_{DS} = -4.5\text{ V}, I_D = -2.5\text{ A}$		5.3		S
Diode Forward Voltage ^a	V_{SD}	$I_S = -1.05\text{ A}, V_{GS} = 0\text{ V}$		-0.79	-1.1	V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = -5\text{ V}, V_{GS} = -4.5\text{ V}, I_D = -2.5\text{ A}$		4.2	6	nC
Gate-Source Charge	Q_{gs}		0.45			
Gate-Drain Charge	Q_{gd}		0.90			
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -5\text{ V}, R_L = 5\text{ }\Omega$ $I_D \cong -1\text{ A}, V_{GEN} = -4.5\text{ V}, R_g = 6\text{ }\Omega$		10	15	ns
Rise Time	t_r		47	70		
Turn-Off Delay Time	$t_{d(off)}$		28	45		
Fall Time	t_f		34	50		
Source-Drain Reverse Recovery Time	t_{rr}		$I_F = -1.05\text{ A}, di/dt = 100\text{ A}/\mu\text{s}$		20	

Notes:

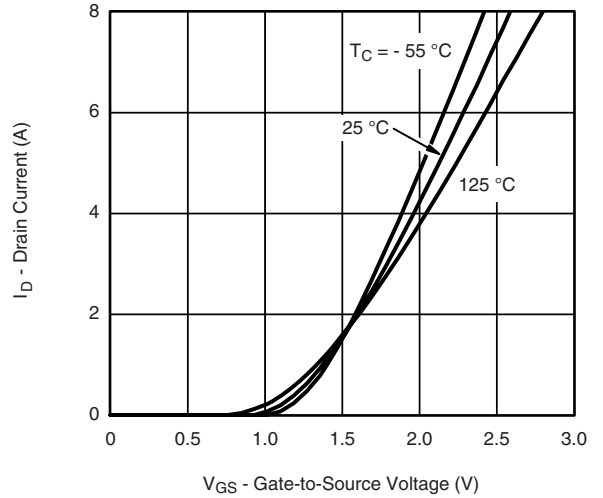
- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
b. Guaranteed by design, not subject to production testing.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

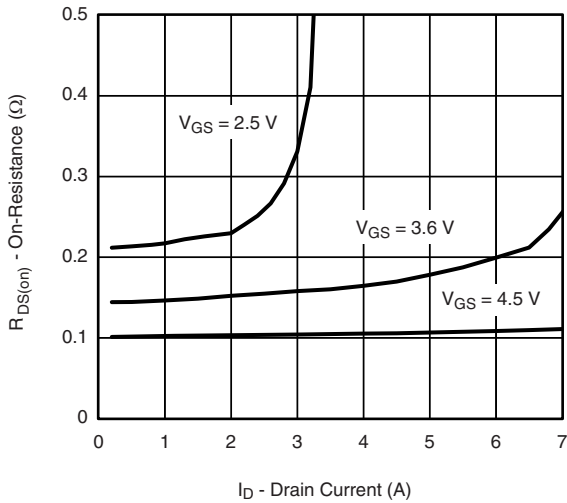
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



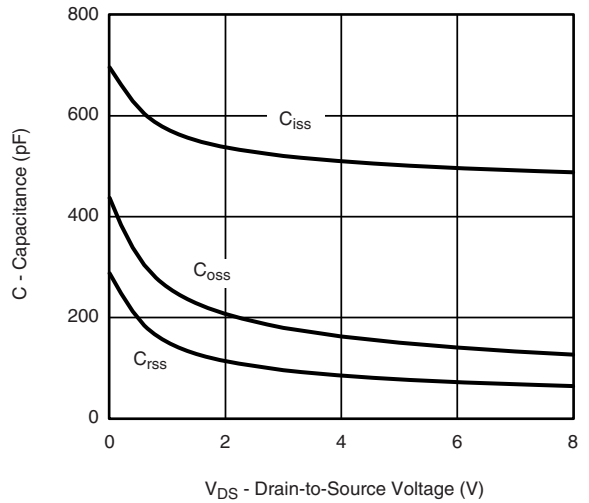
V_{DS} - Drain-to-Source Voltage (V)
Output Characteristics



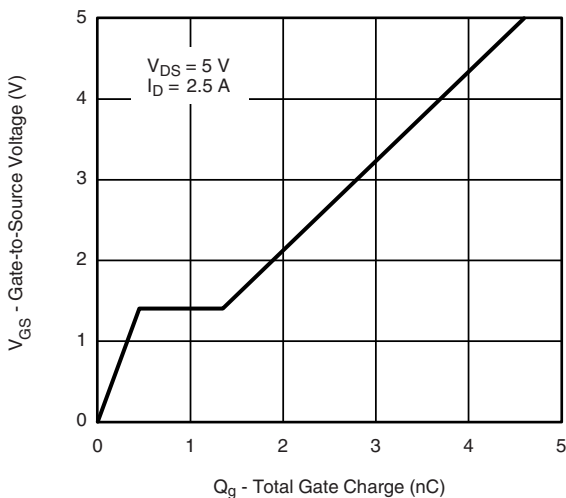
V_{GS} - Gate-to-Source Voltage (V)
Transfer Characteristics



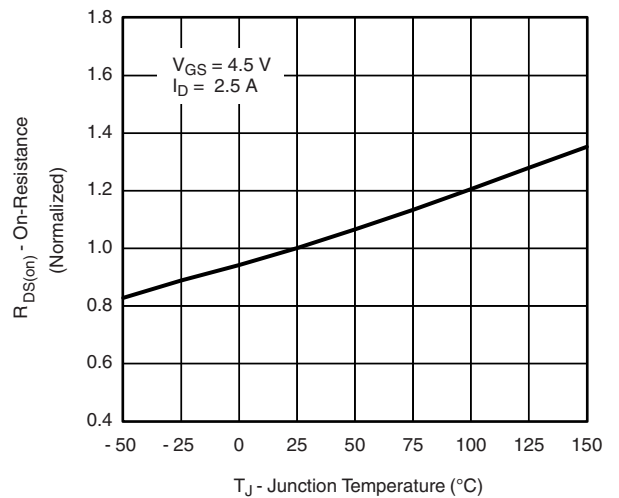
I_D - Drain Current (A)
On-Resistance vs. Drain Current



V_{DS} - Drain-to-Source Voltage (V)
Capacitance

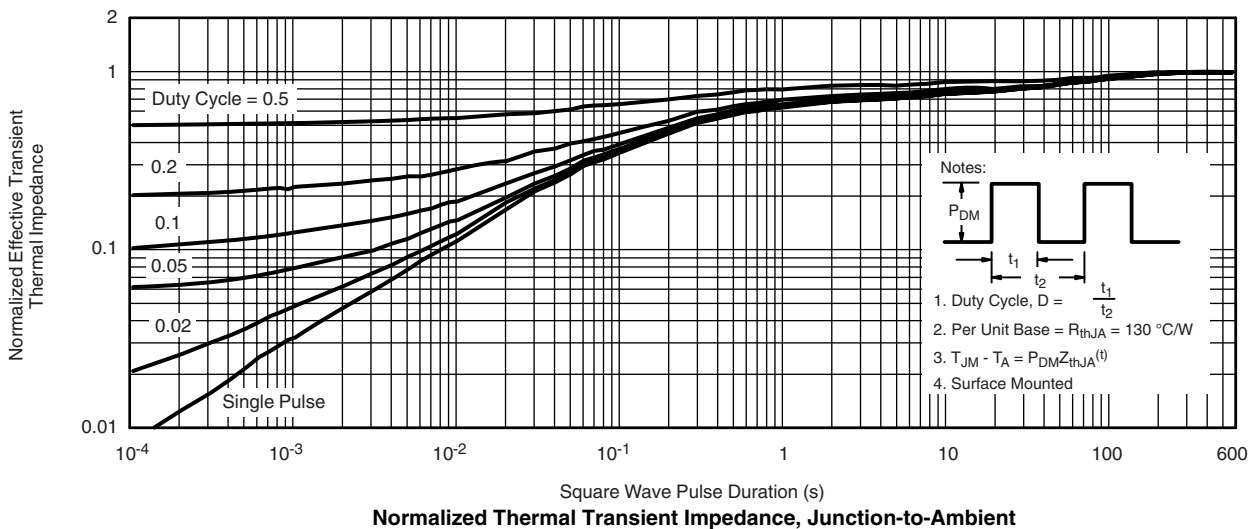
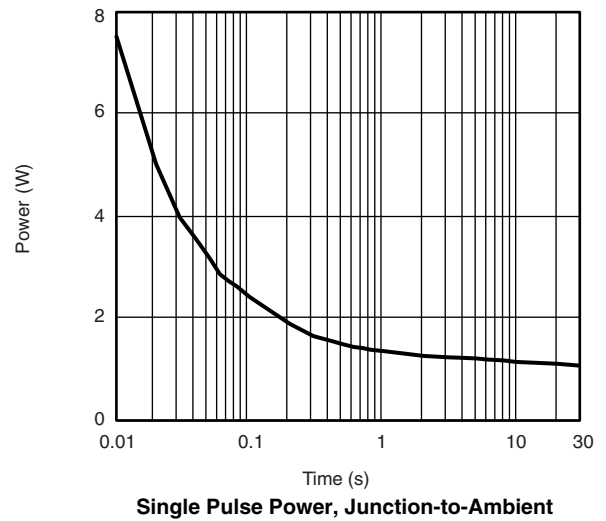
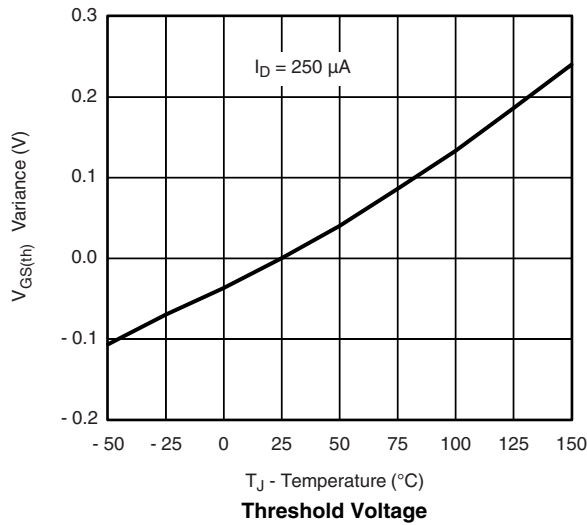
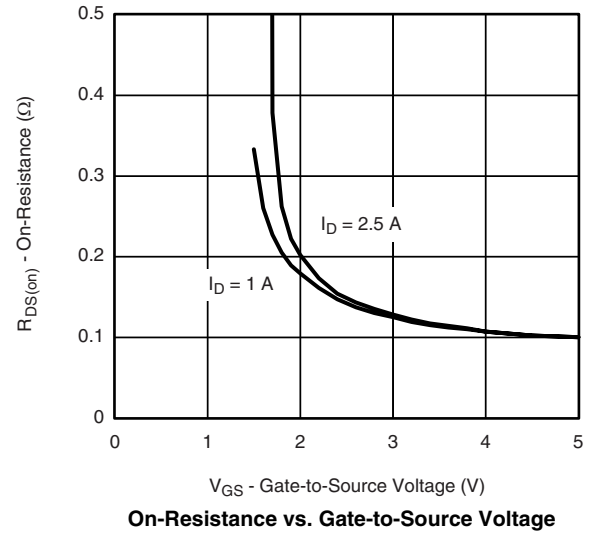
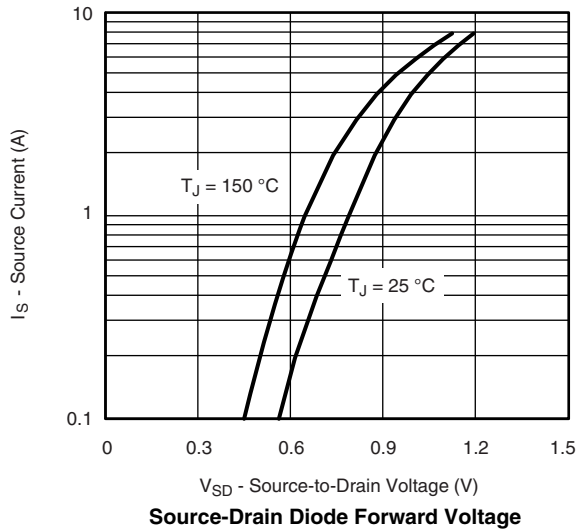


Q_g - Total Gate Charge (nC)
Gate Charge

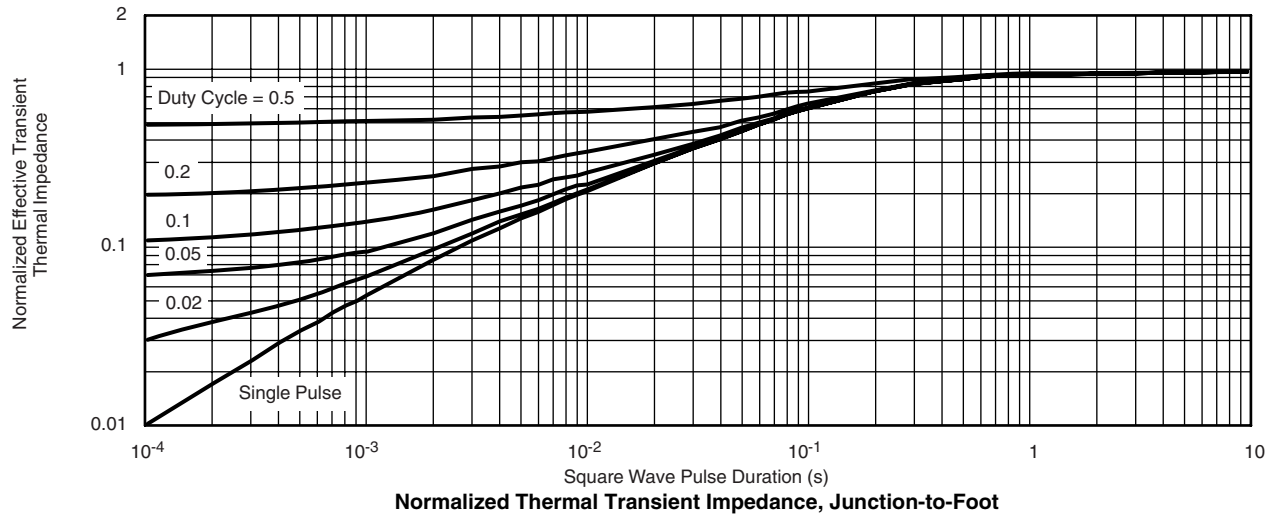


T_J - Junction Temperature ($^\circ\text{C}$)
On-Resistance vs. Junction Temperature

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



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