



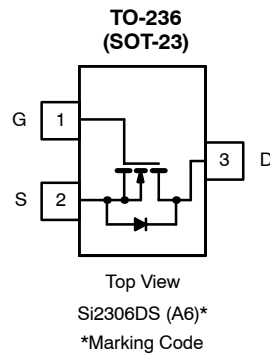
N-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY

V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
30	0.057 @ $V_{GS} = 10$ V	3.5
	0.094 @ $V_{GS} = 4.5$ V	2.8

FEATURES

- TrenchFET® Power MOSFET
- 100% R_g Tested



Ordering Information: Si2306DS-T1

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^{a, b}	$T_A = 25^\circ\text{C}$	I_D	3.5	A
	$T_A = 70^\circ\text{C}$		2.8	
Pulsed Drain Current		I_{DM}	16	
Continuous Source Current (Diode Conduction) ^{a, b}		I_S	1.25	
Maximum Power Dissipation ^{a, b}	$T_A = 25^\circ\text{C}$	P_D	1.25	W
	$T_A = 70^\circ\text{C}$		0.80	
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	$t \leq 5$ sec	R_{thJA}		100	$^\circ\text{C/W}$
	Steady State		130		

Notes

- a. Surface Mounted on FR4 Board.
b. $t \leq 5$ sec.

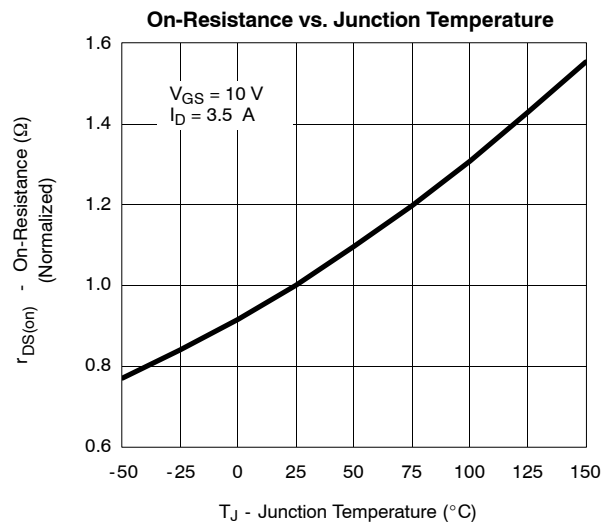
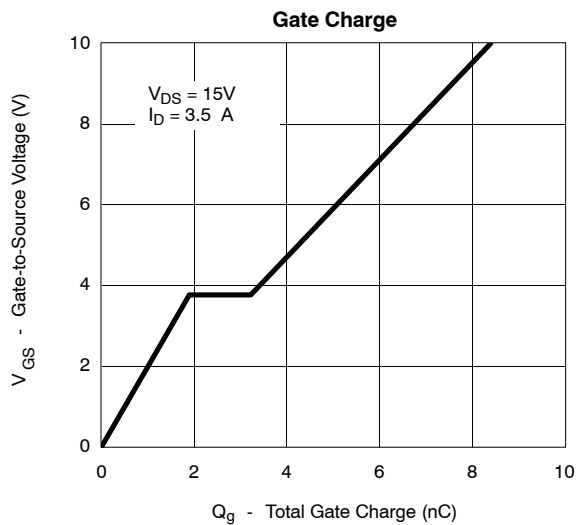
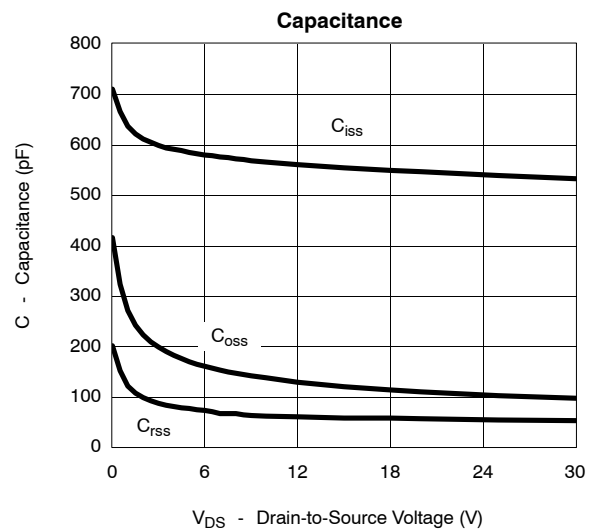
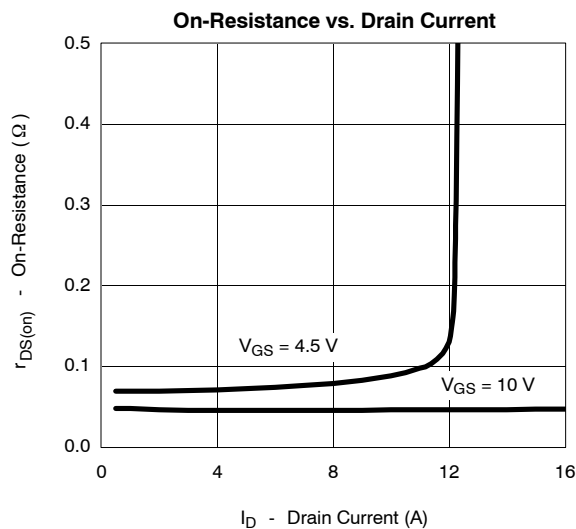
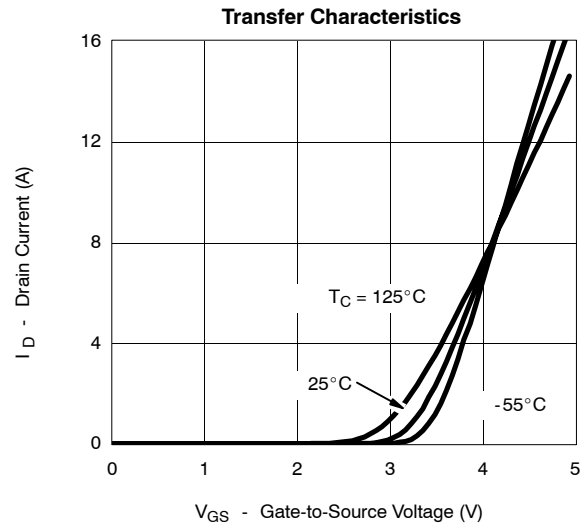
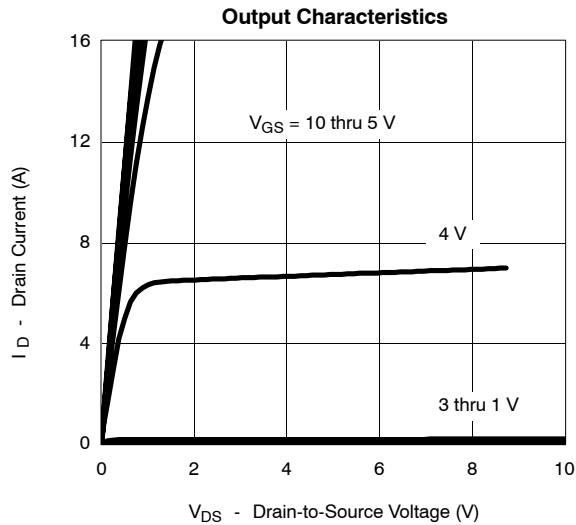
SPECIFICATIONS (T _J = 25 °C UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{DS} = 0 V, I _D = 250 μA	30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 μA	1			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30 V, V _{GS} = 0 V			0.5	μA
		V _{DS} = 30 V, V _{GS} = 0 V, T _J = 55 °C			10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≥ 4.5 V, V _{GS} = 10 V	6			A
		V _{DS} ≥ 4.5 V, V _{GS} = 4.5 V	4			
Drain-Source On-State Resistance ^a	r _{DS(on)}	V _{GS} = 10 V, I _D = 3.5 A		0.046	0.057	Ω
		V _{GS} = 4.5 V, I _D = 2.8 A		0.070	0.094	
Forward Transconductance ^a	g _{fs}	V _{DS} = 4.5 V, I _D = 3.5 A		6.9		S
Diode Forward Voltage ^a	V _{SD}	I _S = 1.25 A, V _{GS} = 0 V		0.8	1.2	V
Dynamic ^b						
Gate Charge	Q _g	V _{DS} = 15 V, V _{GS} = 5 V, I _D = 3.5 A		4.2	7	nC
Total Gate Charge	Q _{gt}	V _{DS} = 15 V, V _{GS} = 10 V, I _D = 3.5 A		8.5	20	
Gate-Source Charge	Q _{gs}			1.9		
Gate-Drain Charge	Q _{gd}			1.35		
Gate Resistance	R _g		0.5		2.4	Ω
Input Capacitance	C _{iss}	V _{DS} = 15 V, V _{GS} = 0 V, f = 1 MHz		555		pF
Output Capacitance	C _{oss}			120		
Reverse Transfer Capacitance	C _{rss}			60		
Switching						
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		9	20	ns
Rise Time	t _r			7.5	18	
Turn-Off Delay Time	t _{d(off)}			17	35	
Fall Time	t _f			5.2	12	

Notes

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



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



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