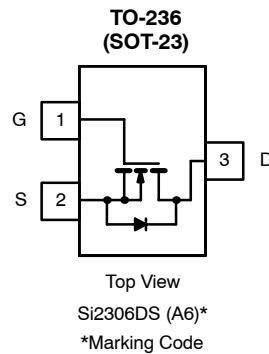


N-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
30	0.057 @ $V_{GS} = 10\text{ V}$	3.5
	0.094 @ $V_{GS} = 4.5\text{ V}$	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	$t \leq 5\text{ sec}$	R_{thJA}		100	$^\circ\text{C/W}$
	Steady State		130		

Notes

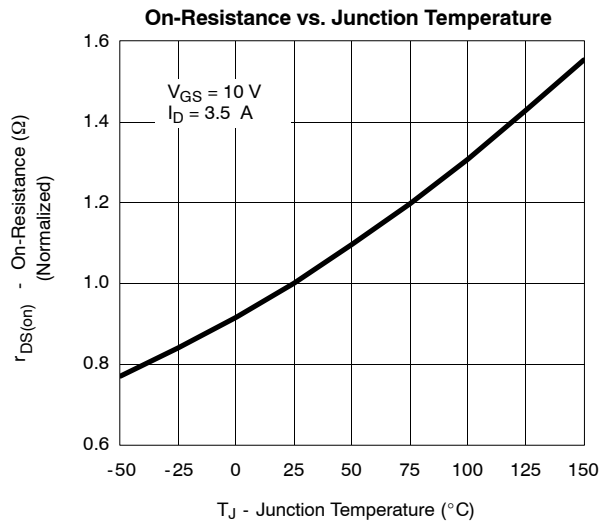
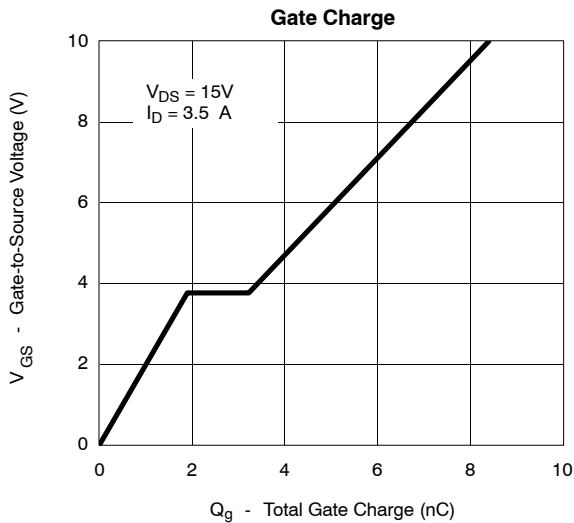
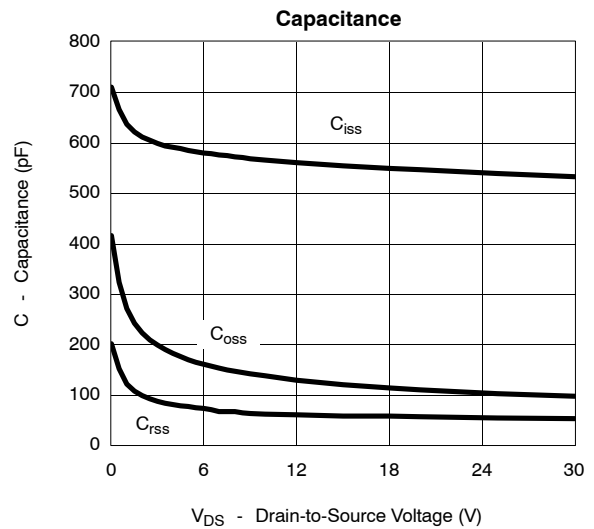
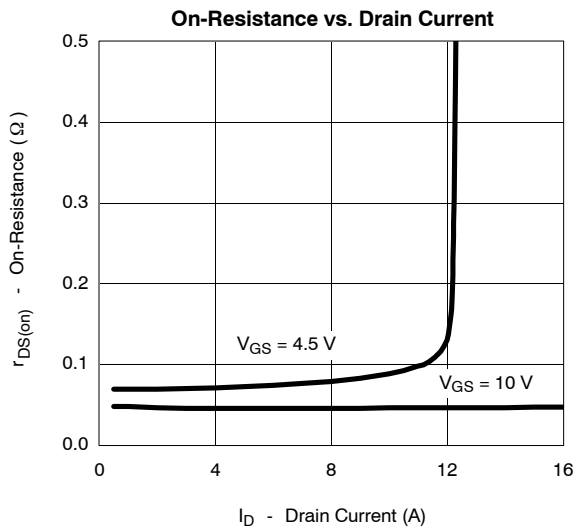
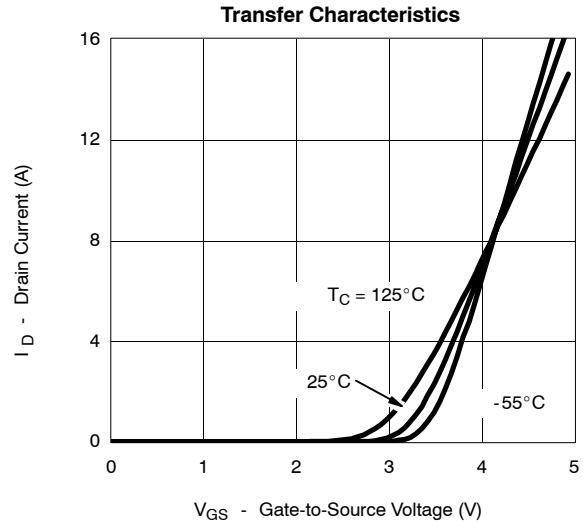
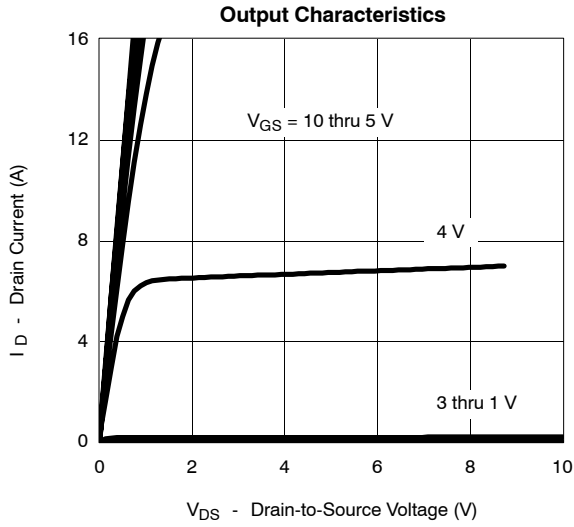
- a. Surface Mounted on FR4 Board.
b. $t \leq 5\text{ sec}$.

SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)						
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{DS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	1			
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}$			0.5	μA
		$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}, T_J = 55^\circ\text{C}$			10	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 4.5\text{ V}, V_{GS} = 10\text{ V}$	6			A
		$V_{DS} \geq 4.5\text{ V}, V_{GS} = 4.5\text{ V}$	4			
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 3.5\text{ A}$		0.046	0.057	Ω
		$V_{GS} = 4.5\text{ V}, I_D = 2.8\text{ A}$		0.070	0.094	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 4.5\text{ V}, I_D = 3.5\text{ A}$		6.9		S
Diode Forward Voltage ^a	V_{SD}	$I_S = 1.25\text{ A}, V_{GS} = 0\text{ V}$		0.8	1.2	V
Dynamic^b						
Gate Charge	Q_g	$V_{DS} = 15\text{ V}, V_{GS} = 5\text{ V}, I_D = 3.5\text{ A}$		4.2	7	nC
Total Gate Charge	Q_{gt}	$V_{DS} = 15\text{ V}, V_{GS} = 10\text{ V}, I_D = 3.5\text{ A}$		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}	$V_{DS} = 15\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$		555		μF
Output Capacitance	C_{oss}			120		
Reverse Transfer Capacitance	C_{rss}			60		
Switching						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15\text{ V}, R_L = 15\ \Omega$ $I_D \approx 1\text{ A}, V_{GEN} = 10\text{ V}, R_G = 6\ \Omega$		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 $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

