



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

### PRODUCT SUMMARY

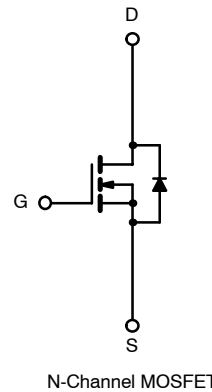
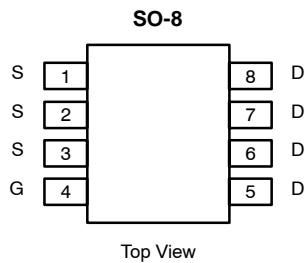
$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
30	0.0045 @ $V_{GS} = 10$ V	20
	0.0055 @ $V_{GS} = 4.5$ V	19

### FEATURES

- TrenchFET® Power MOSFET
- Optimized for "Low Side" Synchronous Rectifier Operation
- 100%  $R_g$  Tested

### APPLICATIONS

- DC/DC Converters
- Synchronous Rectifiers



Ordering Information: Si4362DY  
Si4362DY-T1 (with Tape and Reel)  
Si4362DY—E3 (Lead Free)  
Si4362DY-T1—E3 (Lead Free with Tape and Reel)

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)<sup>a</sup>

Parameter		Symbol	Limits	Unit
Drain-Source Voltage		$V_{DS}$	30	
Gate-Source Voltage		$V_{GS}$	$\pm 12$	
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>a</sup>	$T_A = 25^\circ\text{C}$	$I_D$	20	A
	$T_A = 70^\circ\text{C}$		15	
Pulsed Drain Current (10 $\mu\text{s}$ Pulse Width)		$I_{DM}$	60	
Continuous Source Current (Diode Conduction) <sup>a</sup>		$I_S$	2.9	
Maximum Power Dissipation <sup>a</sup>	$T_A = 25^\circ\text{C}$	$P_D$	3.5	W
	$T_A = 70^\circ\text{C}$		2.2	
Operating Junction and Storage Temperature Range		$T_J, T_{stg}$	-55 to 150	

### THERMAL RESISTANCE RATINGS<sup>a</sup>

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient	$R_{thJA}$	29	35	$^\circ\text{C/W}$
Maximum Junction-to-Foot (Drain)	$R_{thJF}$	13	16	

#### Notes

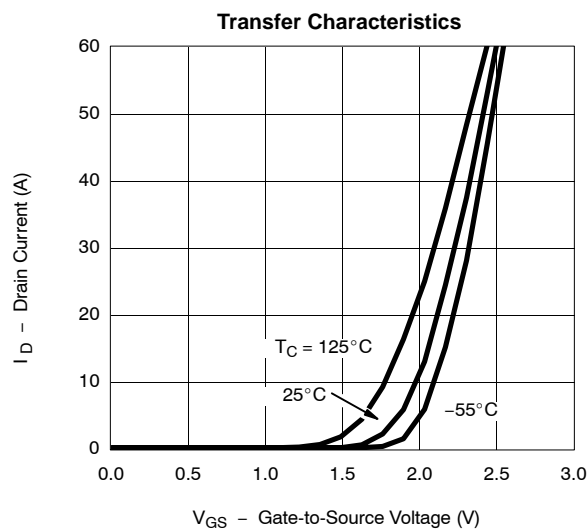
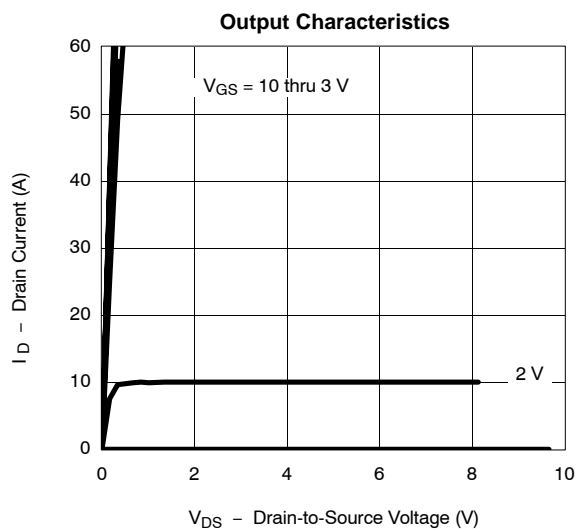
a. Surface Mounted on 1" x 1" FR4 Board,  $t \leq 10$  sec

**SPECIFICATIONS ( $T_J = 25^\circ\text{C}$  UNLESS OTHERWISE NOTED)**

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$ , $I_D = 250\ \mu\text{A}$	0.6			V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0\ \text{V}$ , $V_{GS} = \pm 12\ \text{V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 30\ \text{V}$ , $V_{GS} = 0\ \text{V}$			1	$\mu\text{A}$
		$V_{DS} = 30\ \text{V}$ , $V_{GS} = 0\ \text{V}$ , $T_J = 55^\circ\text{C}$			5	
On-State Drain Current <sup>a</sup>	$I_{D(on)}$	$V_{DS} \geq 5\ \text{V}$ , $V_{GS} = 10\ \text{V}$	30			A
Drain-Source On-State Resistance <sup>a</sup>	$r_{DS(on)}$	$V_{GS} = 10\ \text{V}$ , $I_D = 20\ \text{A}$		0.0035	0.0045	$\Omega$
		$V_{GS} = 4.5\ \text{V}$ , $I_D = 19\ \text{A}$		0.0042	0.0055	
Forward Transconductance <sup>a</sup>	$g_{fs}$	$V_{DS} = 15\ \text{V}$ , $I_D = 20\ \text{A}$		90		S
Diode Forward Voltage <sup>a</sup>	$V_{SD}$	$I_S = 2.9\ \text{A}$ , $V_{GS} = 0\ \text{V}$		0.75	1.1	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = 15\ \text{V}$ , $V_{GS} = 4.5\ \text{V}$ , $I_D = 20\ \text{A}$		42	55	nC
Gate-Source Charge	$Q_{gs}$			12.8		
Gate-Drain Charge	$Q_{gd}$			7.7		
Gate Resistance	$R_G$		0.5	1.3	2.2	$\Omega$
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 15\ \text{V}$ , $R_L = 15\ \Omega$ $I_D \cong 1\ \text{A}$ , $V_{GEN} = 10\ \text{V}$ , $R_g = 6\ \Omega$		17	30	ns
Rise Time	$t_r$			14	25	
Turn-Off Delay Time	$t_{d(off)}$			158	230	
Fall Time	$t_f$			43	65	
Source-Drain Reverse Recovery Time	$t_{rr}$	$I_F = 2.9\ \text{A}$ , $di/dt = 100\ \text{A}/\mu\text{s}$		50	80	

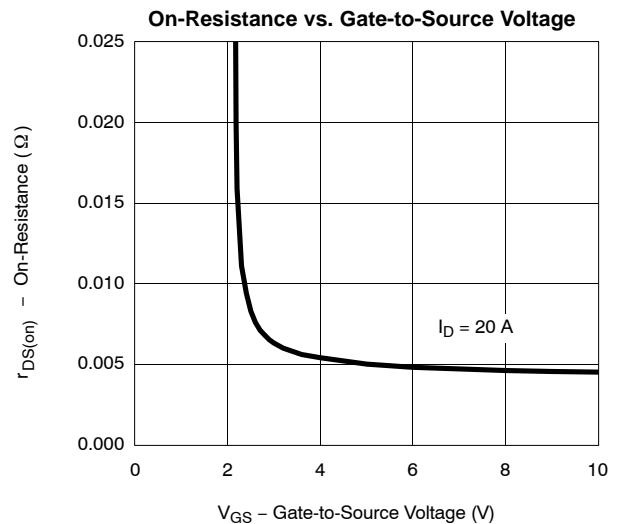
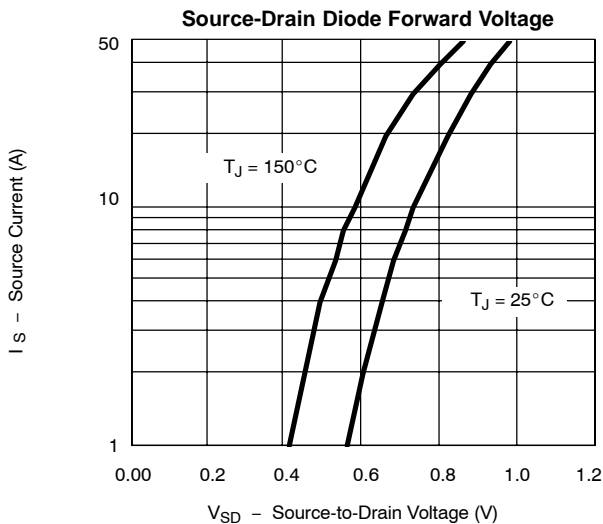
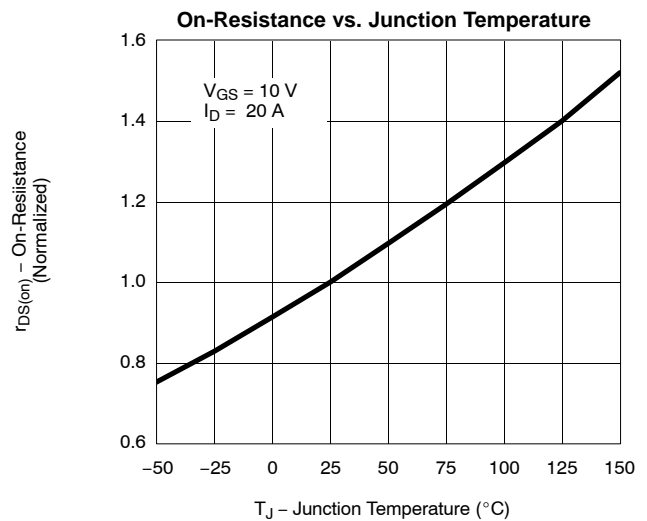
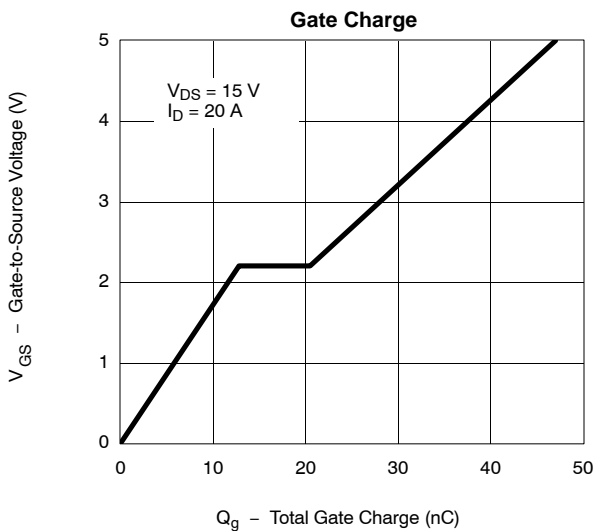
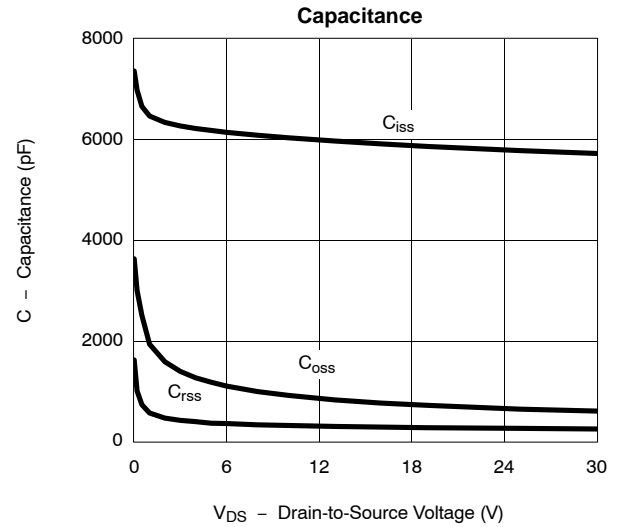
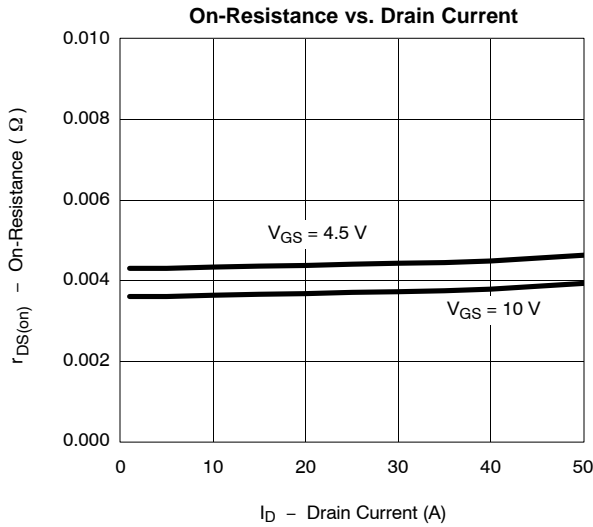
## Notes

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

**TYPICAL CHARACTERISTICS ( $25^\circ\text{C}$  UNLESS NOTED)**



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