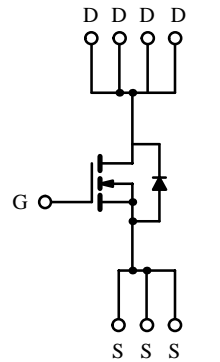
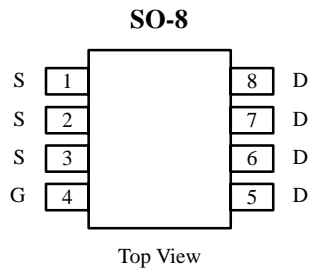


## N-Channel 30-V (D-S) Rated MOSFET

### Product Summary

$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
30	0.028 @ $V_{GS} = 10$ V	$\pm 7.0$
	0.042 @ $V_{GS} = 4.5$ V	$\pm 5.8$



N-Channel MOSFET

### 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	$V_{GS}$	$\pm 20$		
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>a</sup>	$I_D$	$T_A = 25^\circ\text{C}$	$\pm 7.0$	A
		$T_A = 70^\circ\text{C}$	$\pm 5.8$	
Pulsed Drain Current	$I_{DM}$	$\pm 30$		
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	2.3		
Maximum Power Dissipation <sup>a</sup>	$P_D$	$T_A = 25^\circ\text{C}$	2.5	W
		$T_A = 70^\circ\text{C}$	1.6	
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150	$^\circ\text{C}$	

### Thermal Resistance Ratings

Parameter	Symbol	Limit	Unit
Maximum Junction-to-Ambient <sup>a</sup>	$R_{thJA}$	50	$^\circ\text{C}/\text{W}$

#### Notes

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

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70154.

A SPICE Model data sheet is available for this product (FaxBack document #70552).

# Si4412DY

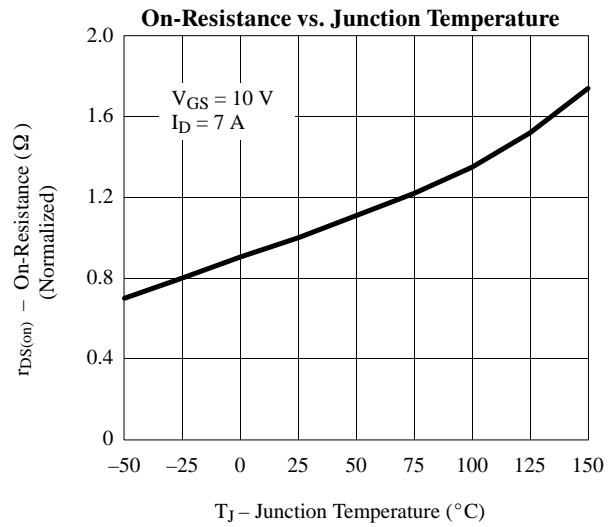
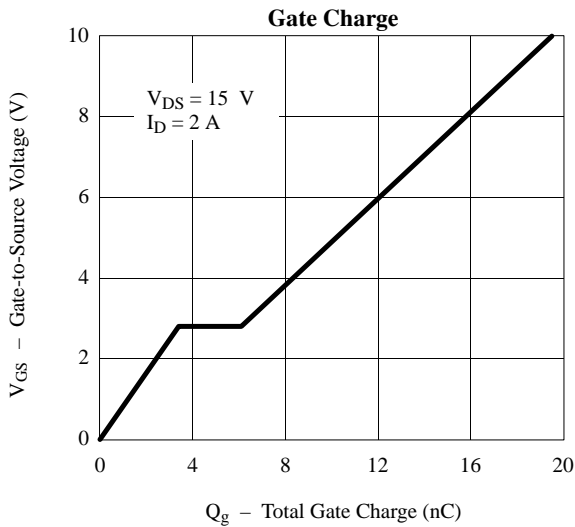
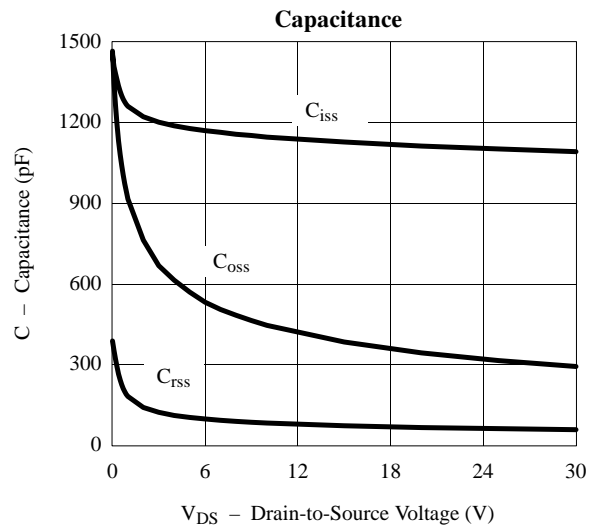
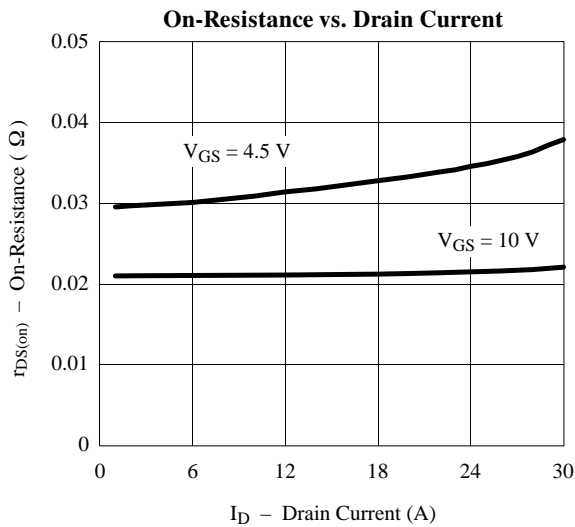
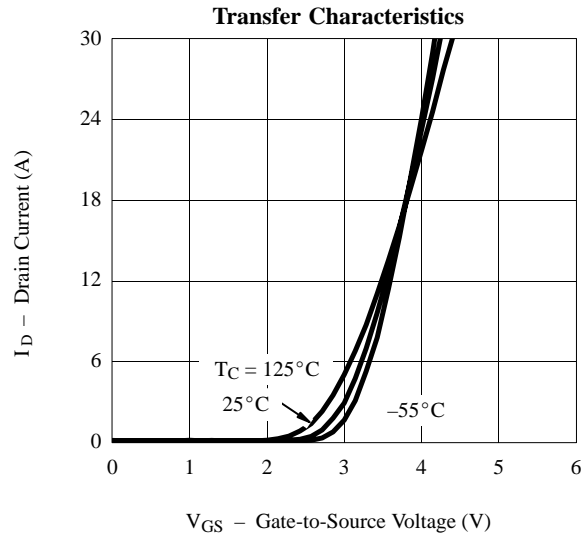
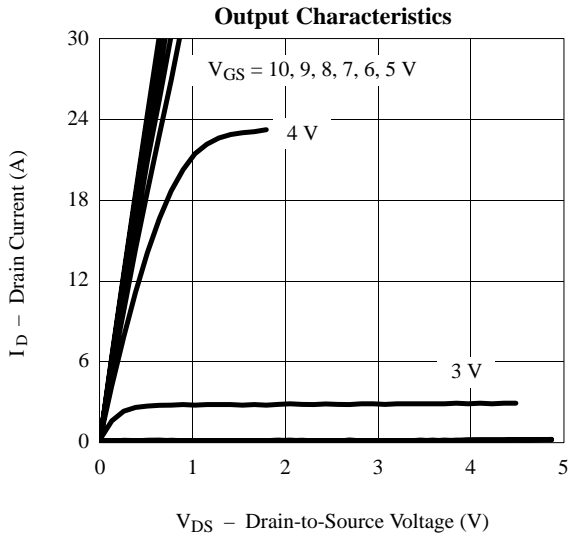
## Specifications ( $T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typ <sup>a</sup>	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	1.0			V
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}$			2	$\mu\text{A}$
		$V_{DS} = 30 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^\circ\text{C}$			25	
On-State Drain Current <sup>b</sup>	$I_{D(on)}$	$V_{DS} \geq 5 \text{ V}, V_{GS} = 10 \text{ V}$	30			A
Drain-Source On-State Resistance <sup>b</sup>	$r_{DS(on)}$	$V_{GS} = 10 \text{ V}, I_D = 7.0 \text{ A}$		0.021	0.028	$\Omega$
		$V_{GS} = 4.5 \text{ V}, I_D = 3.5 \text{ A}$		0.030	0.042	
Forward Transconductance <sup>b</sup>	$g_{fs}$	$V_{DS} = 15 \text{ V}, I_D = 7.0 \text{ A}$		16		S
Diode Forward Voltage <sup>b</sup>	$V_{SD}$	$I_S = 2 \text{ A}, V_{GS} = 0 \text{ V}$		0.75	1.1	V
<b>Dynamic<sup>a</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = 15 \text{ V}, V_{GS} = 10 \text{ V}, I_D = 2 \text{ A}$		19.5	29	nC
Gate-Source Charge	$Q_{gs}$			3.4		
Gate-Drain Charge	$Q_{gd}$			2.7		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 25 \text{ V}, R_L = 25 \Omega$ $I_D \cong 1 \text{ A}, V_{GEN} = 10 \text{ V}, R_G = 6 \Omega$		9	15	ns
Rise Time	$t_r$			12	20	
Turn-Off Delay Time	$t_{d(off)}$			38	55	
Fall Time	$t_f$			19	28	
Source-Drain Reverse Recovery Time	$t_{rr}$	$I_F = 2 \text{ A}, di/dt = 100 \text{ A}/\mu\text{s}$		45	80	

### Notes

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

## Typical Characteristics (25°C Unless Otherwise Noted)



# Si4412DY

## Typical Characteristics (25°C Unless Otherwise Noted)

