

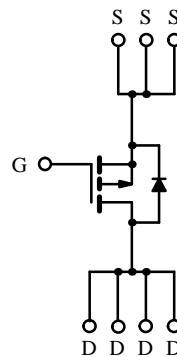
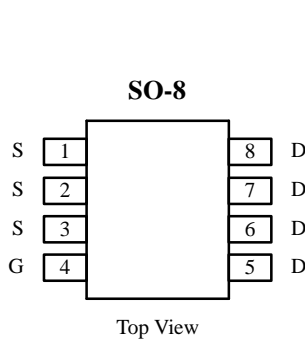
## P-Channel Enhancement-Mode MOSFET

### Product Summary

$V_{DS}$ (V)	$r_{DS(on)}$ ( $\Omega$ )	$I_D$ (A)
-20	0.065 @ $V_{GS} = -4.5$ V	$\pm 5.4$
	0.100 @ $V_{GS} = -2.7$ V	$\pm 4.2$

Recommended upgrade: Si9424DY

Lower profile/smaller size—see LITE FOOT® equivalent: Si6433DQ



### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	
Continuous Drain Current ( $T_J = 150^\circ\text{C}$ ) <sup>a</sup>	$I_D$	$T_A = 25^\circ\text{C}$	$\pm 5.4$
		$T_A = 70^\circ\text{C}$	$\pm 4.4$
Pulsed Drain Current	$I_{DM}$	$\pm 10$	A
Continuous Source Current (Diode Conduction) <sup>a</sup>	$I_S$	-2.6	
Maximum Power Dissipation <sup>a</sup>	$P_D$	$T_A = 25^\circ\text{C}$	2.5
		$T_A = 70^\circ\text{C}$	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.

Subsequent updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #1207.

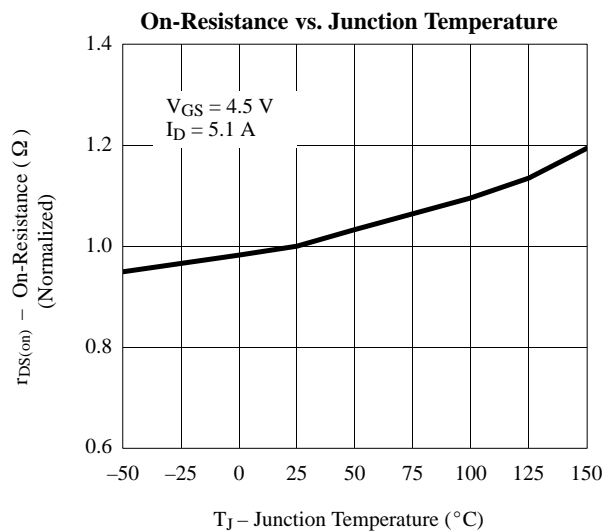
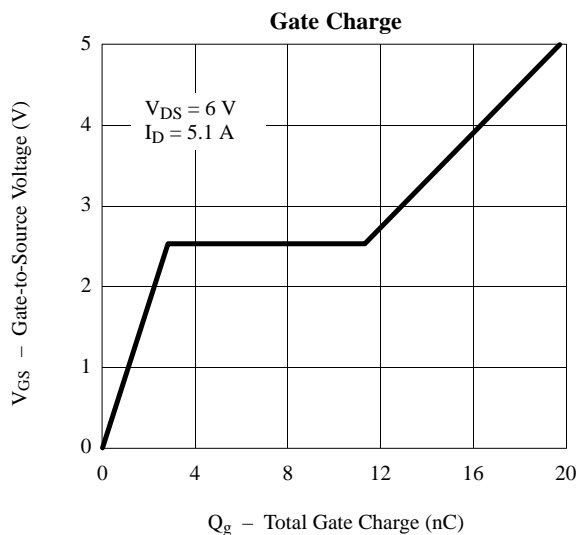
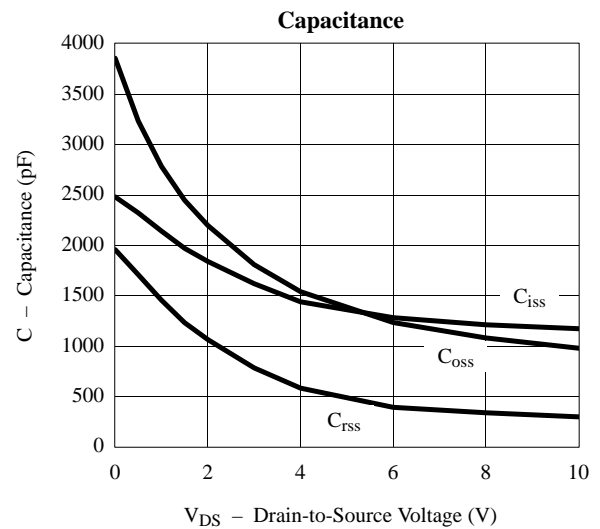
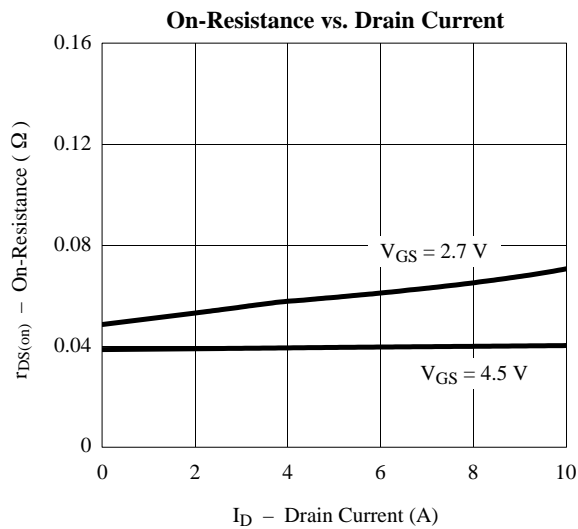
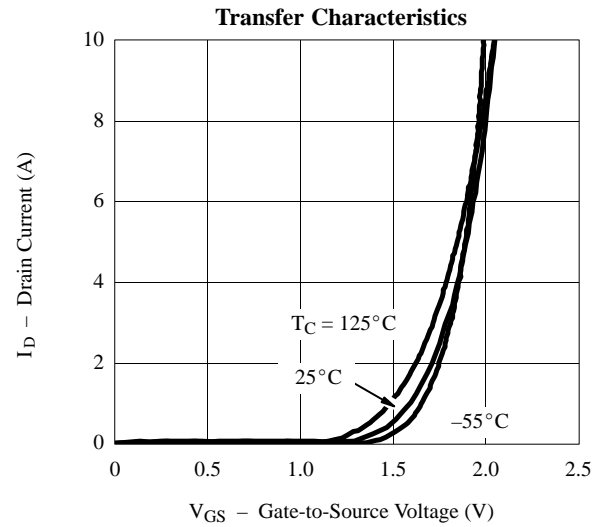
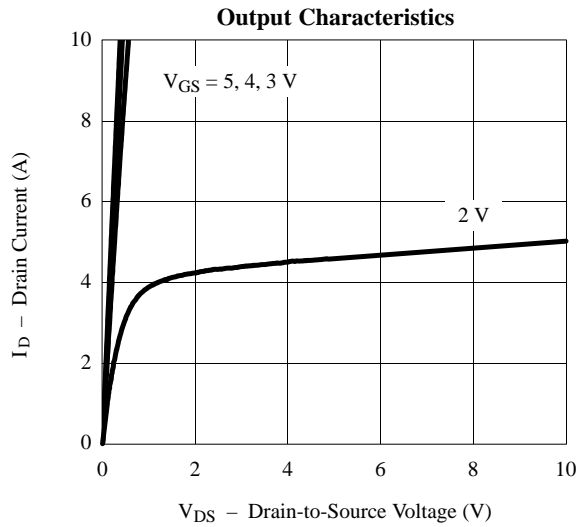
## Specifications ( $T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typ <sup>a</sup>	Max	Unit
<b>Static</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250 \mu\text{A}$	-0.8			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	$I_{DSS}$	$V_{DS} = -16 \text{ V}, V_{GS} = 0 \text{ V}$			-1	$\mu\text{A}$
		$V_{DS} = -10 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 70^\circ\text{C}$			-5	
On-State Drain Current <sup>b</sup>	$I_{D(on)}$	$V_{DS} \leq -5 \text{ V}, V_{GS} = -4.5 \text{ V}$	-10			A
		$V_{DS} \leq -5 \text{ V}, V_{GS} = -2.7 \text{ V}$	-4			
Drain-Source On-State Resistance <sup>b</sup>	$r_{DS(on)}$	$V_{GS} = -4.5 \text{ V}, I_D = -5.1 \text{ A}$		0.045	0.065	$\Omega$
		$V_{GS} = -2.7 \text{ V}, I_D = -2.0 \text{ A}$		0.060	0.100	
Forward Transconductance <sup>b</sup>	$g_{fs}$	$V_{DS} = -9 \text{ V}, I_D = -5.1 \text{ A}$		11		S
Diode Forward Voltage <sup>b</sup>	$V_{SD}$	$I_S = -2.6 \text{ A}, V_{GS} = 0 \text{ V}$		-1.0	-1.2	V
<b>Dynamic<sup>a</sup></b>						
Total Gate Charge	$Q_g$	$V_{DS} = -6 \text{ V}, V_{GS} = -4.5 \text{ V}, I_D = -5.1 \text{ A}$		20	60	nC
Gate-Source Charge	$Q_{gs}$			3		
Gate-Drain Charge	$Q_{gd}$			10		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -6 \text{ V}, R_L = 6 \Omega$ $I_D \cong -1 \text{ A}, V_{GEN} = -4.5 \text{ V}, R_G = 6 \Omega$		30	60	ns
Rise Time	$t_r$			55	100	
Turn-Off Delay Time	$t_{d(off)}$			80	180	
Fall Time	$t_f$			50	100	
Source-Drain Reverse Recovery Time	$t_{rr}$	$I_F = -2.6, di/dt = 100 \text{ A}/\mu\text{s}$		60	80	

Notes

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

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



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