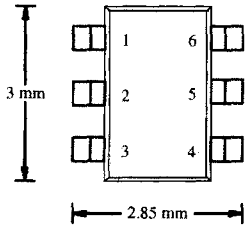
N-Channel 2.5-V (G-S) Rated MOSFET

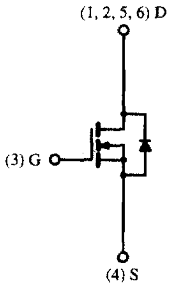
Product Summary

V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
20	0.07 @ V_{GS} = 4.5 V	±4.0
	0.095 @ V_{GS} = 2.5 V	±3.4

2.5-V Rated

TSOP-6
Top View





N-Channel MOSFET

Power Dissipation

Si3442DV—2.0 W

Absolute Maximum Ratings (T_A = 25°C Unless Otherwise Noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	±20	V
Gate-Source Voltage		V_{GS}	±8	
Continuous Drain Current (T_J = 150°C)[a]	T_A = 25°C	I_D	±4.0	A
	T_A = 70°C		±3.1	
Pulsed Drain Current		I_{DM}	±20	
Continuous Source Current (Diode Conduction)[a]		I_S	±1.6	
Maximum Power Dissipation[a]	T_A = 25°C	P_D	2.0	W
	T_A = 70°C		1.28	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	–55 to 150	°C

Thermal Resistance Ratings

Parameter	Symbol	Limit	Unit
Maximum Junction-to-Ambient[a]	R_{thJA}	62.5	°C/W

Notes
a. Surface Mounted on FR4 Board, t ≤ 5 sec.

Updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #70192.

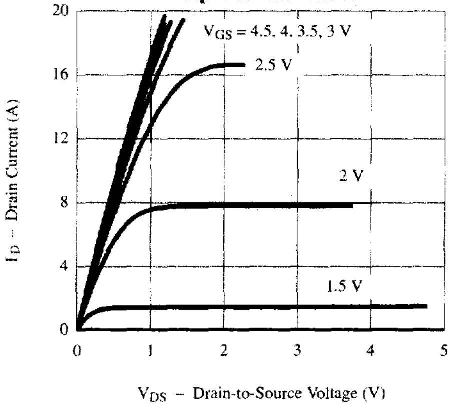
Specifications (T_J = 25°C Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = 250 µA	0.6			V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ± 8 V			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 20 V, V_{GS} = 0 V			1	µA
		V_{DS} = 20 V, V_{GS} = 0 V, T_J = 70°C			5	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} = 5 V, V_{GS} = 4.5 V	10			A
On-State Drain Current[a]		V_{DS} = 5 V, V_{GS} = 2.5 V	4			
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	V_{GS} = 4.5 V, I_D = 4.0 A		0.058	0.07	Ω
		V_{GS} = 2.5 V, I_D = 3.4 A		0.072	0.095	
Forward Transconductance[a]	g_{fs}	V_{DS} = 10 V, I_D = 4.0 A		11.3		S
Diode Forward Voltage[a]	V_{SD}	I_S = 1.6 A, V_{GS} = 0 V		0.75	1.2	V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = 10 V, V_{GS} = 4.5 V, I_D = 4.0 A		7.0	10	nC
Gate-Source Charge	Q_{gs}			1.1		
Gate-Drain Charge	Q_{gd}			2.0		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 10 V, R_L = 10 Ω I_D ≅ 1 A, V_{GEN} = 4.5 V, R_G = 6 Ω		8	20	ns
Rise Time	t_r			24	40	
Turn-Off Delay Time	$t_{d(off)}$			35	60	
Fall Time	t_f			10	20	
Source-Drain Reverse Recovery Time	t_{rr}	I_F = 1.6 A, di/dt = 100 A/µs		40	70	

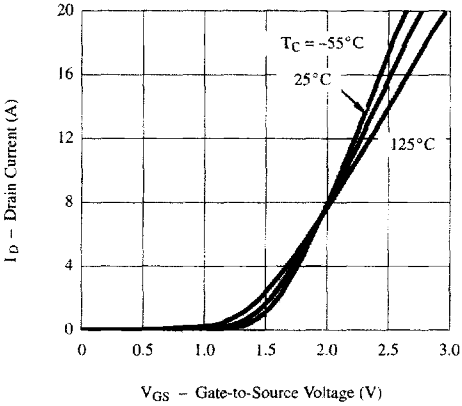
Notes
a. Pulse test; pulse width ≤ 300 µs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

Typical Characteristics (25 °C Unless Otherwise Noted)

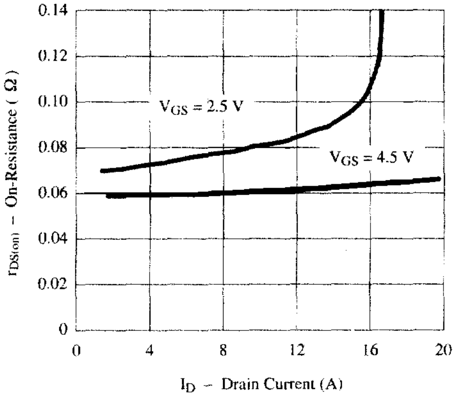
Output Characteristics



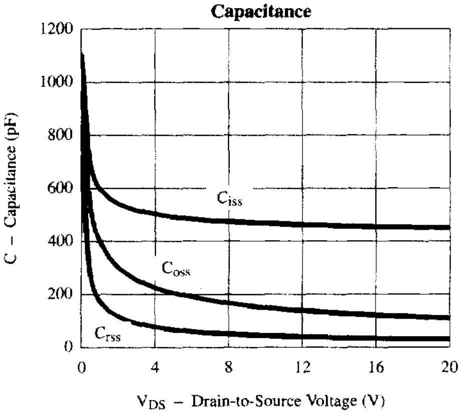
Transfer Characteristics



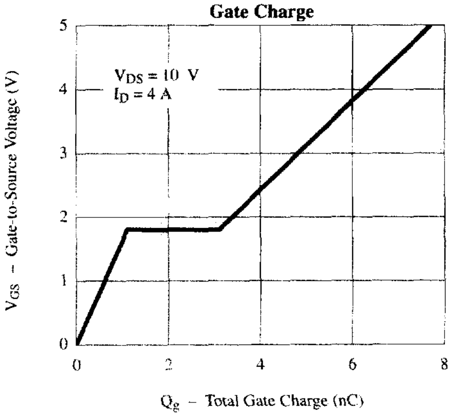
On-Resistance vs. Drain Current



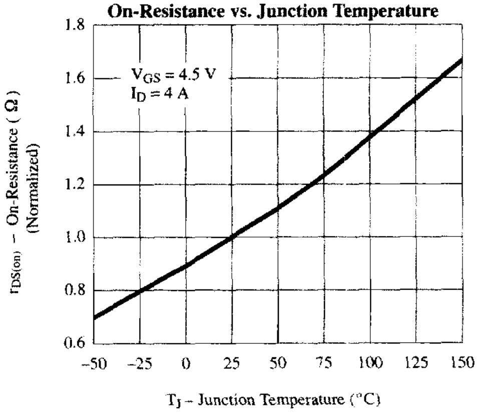
Capacitance



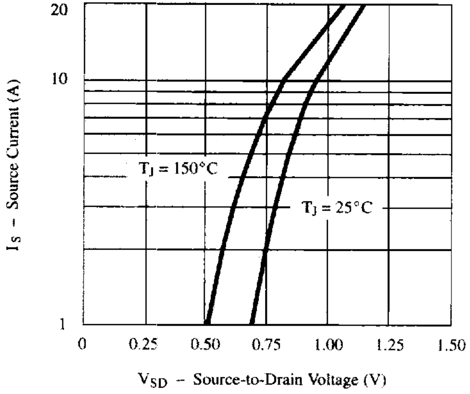
Gate Charge

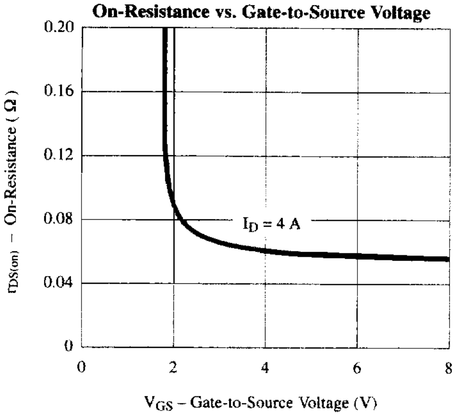


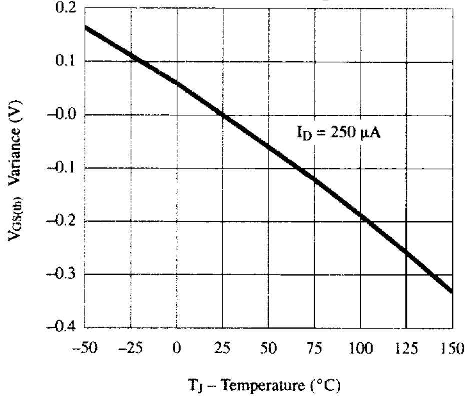
On-Resistance vs. Junction Temperature

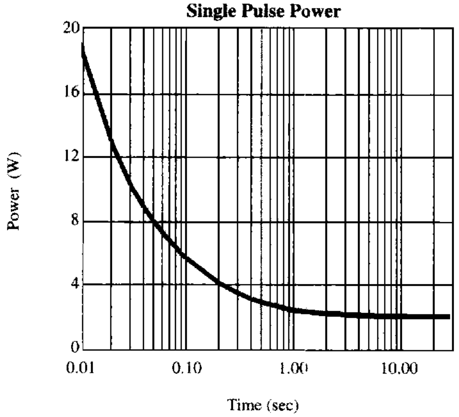


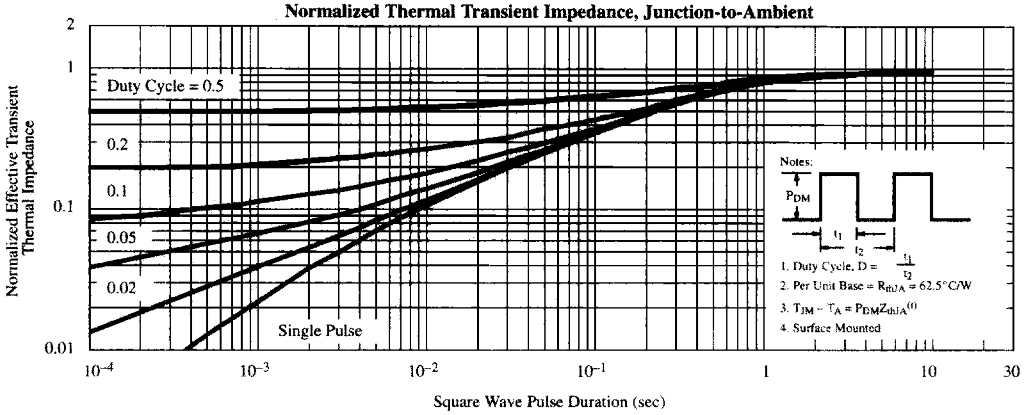
Typical Characteristics (25°C Unless Otherwise Noted)


Source-Drain Diode Forward Voltage


On-Resistance vs. Gate-to-Source Voltage


Threshold Voltage


Single Pulse Power


Normalized Thermal Transient Impedance, Junction-to-Ambient