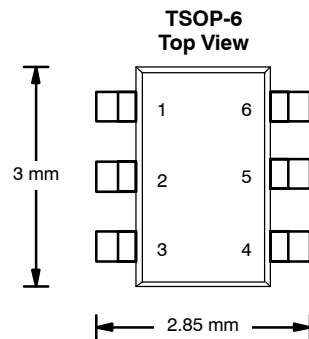


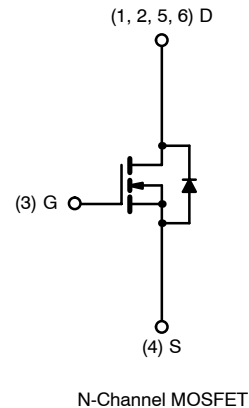


N-Channel 2.5-V (G-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
20	0.057 @ $V_{GS} = 4.5$ V	4.2
	0.090 @ $V_{GS} = 2.5$ V	3.4



Ordering Information: Si3442BDV-T1—E3
Marking Code: 2Bxxx



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T _A = 25°C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	5 secs	Steady State	Unit
Drain-Source Voltage		V _{DS}	20		V
Gate-Source Voltage		V _{GS}	± 12		
Continuous Drain Current (T _J = 150°C) ^a	T _A = 25°C	I _D	4.2	3.0	A
	T _A = 70°C		3.4	2.4	
Pulsed Drain Current		I _{DM}	20		
Continuous Source Current (Diode Conduction) ^a		I _S	1.4	0.72	W
Maximum Power Dissipation ^a	T _A = 25°C	P _D	1.67	0.86	
	T _A = 70°C		1.07	0.55	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^a	$t \leq 5$ sec	R_{thJA}	75	100	$^\circ\text{C/W}$
	Steady State		120	145	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	70	85	

Notes

a. Surface Mounted on FR4 Board, $t \leq 5$ sec.

For SPICE model information via the Worldwide Web: <http://www.vishay.com/www/product/spice.htm>

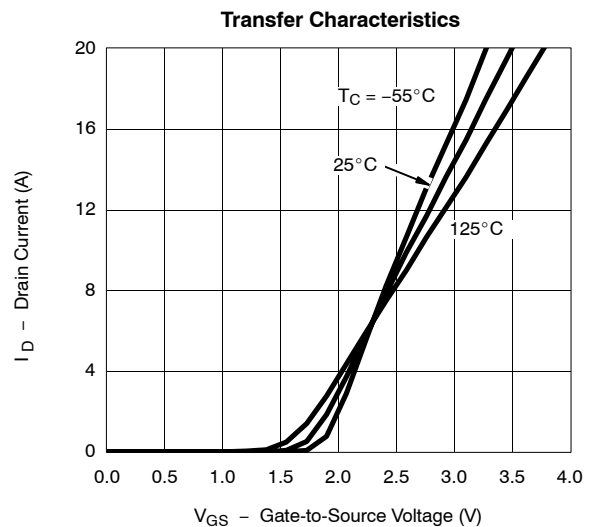
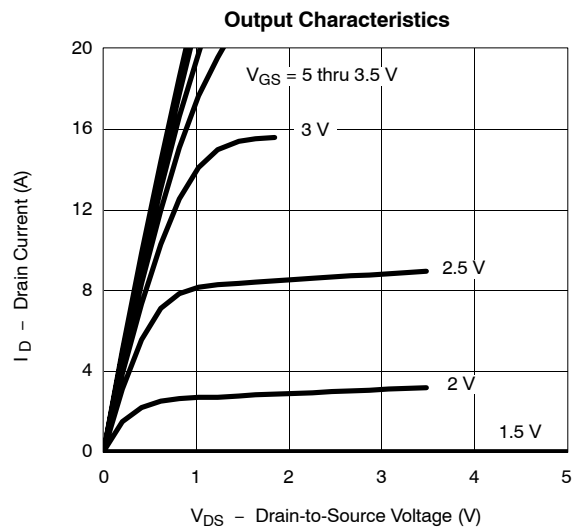
SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\ \mu\text{A}$	0.6		1.8	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\ \text{V}$, $V_{GS} = \pm 12\ \text{V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20\ \text{V}$, $V_{GS} = 0\ \text{V}$			1	μA
		$V_{DS} = 20\ \text{V}$, $V_{GS} = 0\ \text{V}$, $T_J = 70^\circ\text{C}$			5	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} = 5\ \text{V}$, $V_{GS} = 4.5\ \text{V}$	10			A
On-State Drain Current ^a		$V_{DS} = 5\ \text{V}$, $V_{GS} = 2.5\ \text{V}$	4			
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = 4.5\ \text{V}$, $I_D = 4\ \text{A}$		0.045	0.057	Ω
		$V_{GS} = 2.5\ \text{V}$, $I_D = 3.4\ \text{A}$		0.070	0.090	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 10\ \text{V}$, $I_D = 4.0\ \text{A}$		11.3		S
Diode Forward Voltage ^a	V_{SD}	$I_S = 1.6\ \text{A}$, $V_{GS} = 0\ \text{V}$		0.75	1.2	V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = 10\ \text{V}$, $V_{GS} = 4.5\ \text{V}$, $I_D = 4.0\ \text{A}$		3	5	nC
Gate-Source Charge	Q_{gs}			0.65		
Gate-Drain Charge	Q_{gd}			0.95		
Gate Resistance	R_g	$f = 1\ \text{MHz}$		2.7		Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 10\ \text{V}$, $R_L = 10\ \Omega$ $I_D \approx 1\ \text{A}$, $V_{GEN} = 4.5\ \text{V}$, $R_g = 6\ \Omega$		35	55	ns
Rise Time	t_r			50	75	
Turn-Off Delay Time	$t_{d(off)}$			20	30	
Fall Time	t_f			15	25	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = 1.6\ \text{A}$, $di/dt = 100\ \text{A}/\mu\text{s}$		30	60	

Notes

a. Pulse test; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.

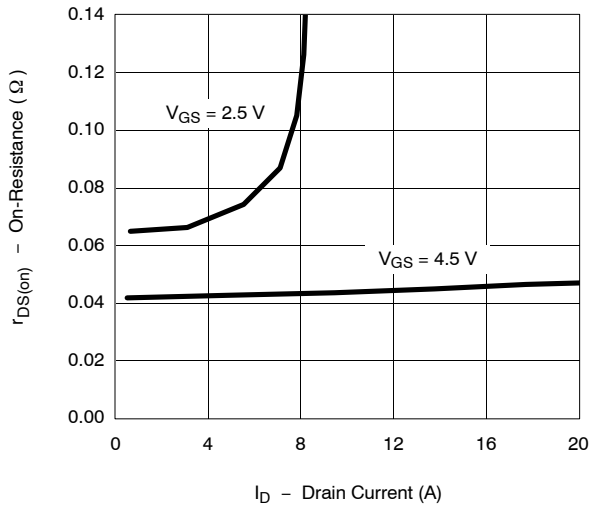
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

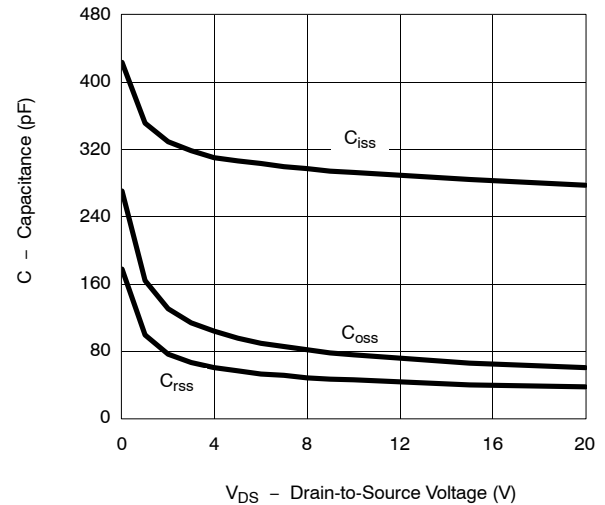


TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

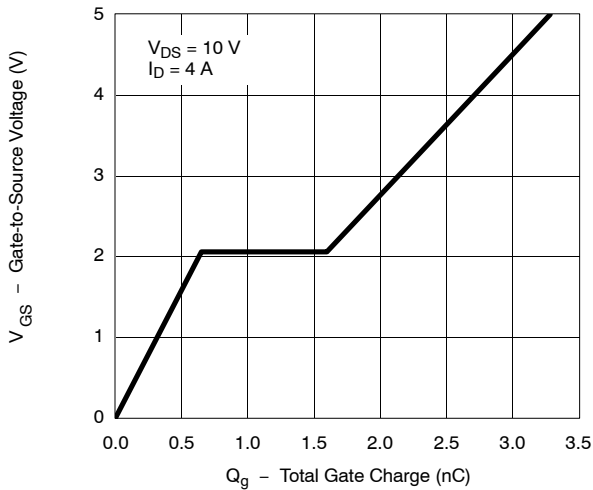
On-Resistance vs. Drain Current



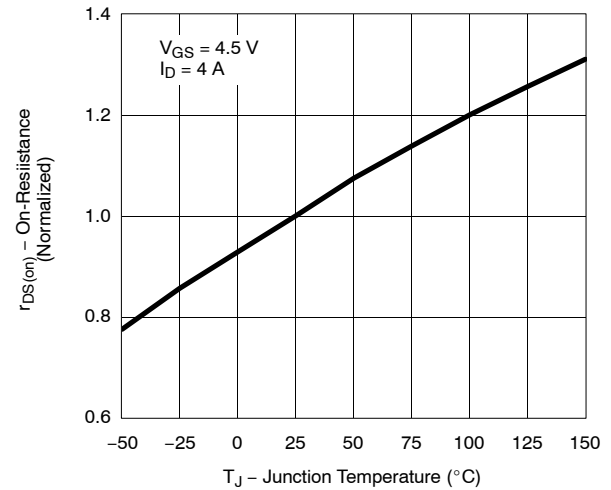
Capacitance



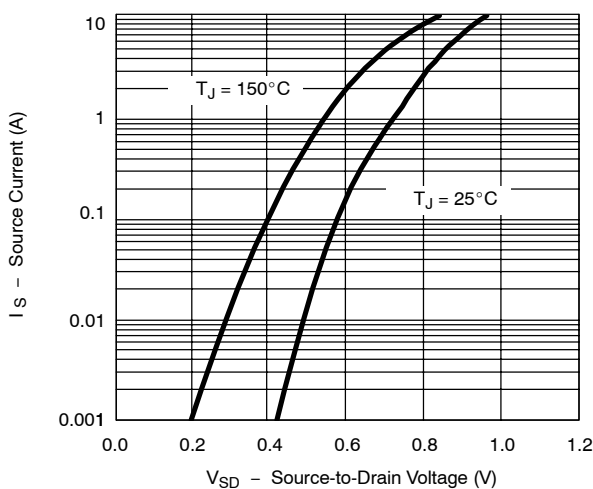
Gate Charge



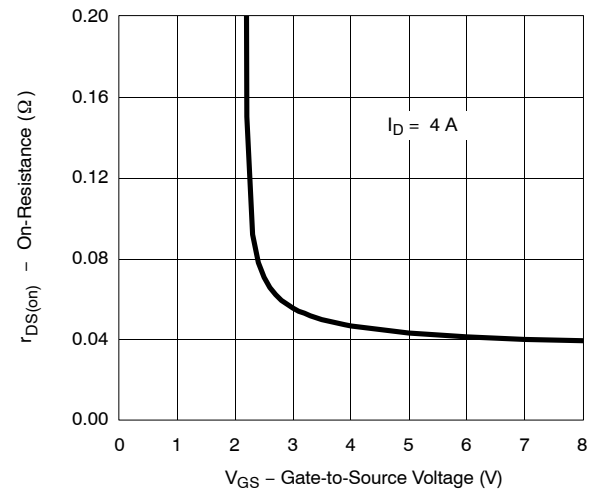
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



TYPICAL CHARACTERISTICS (25 °C UNLESS NOTED)

