Dual P-Channel 20-V (D-S) MOSFET

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
–20	0.019 @ V_{GS} = –10 V	–8.4
	0.031 @ V_{GS} = –4.5 V	–6.7

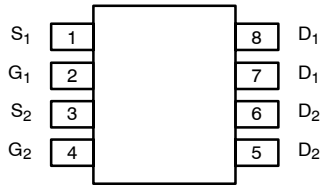
FEATURES

- TrenchFET® Power MOSFET
- 100% R_g Tested

APPLICATIONS

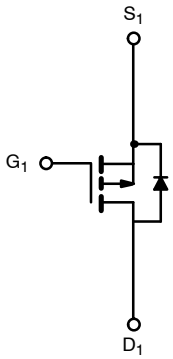
- Load Switching
  - Computer
  - Game Systems
- Battery Switching
  - 2-Cell Li-Ion

SO-8

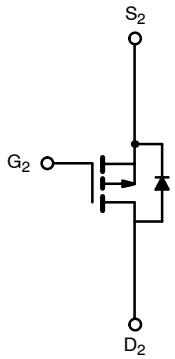


Top View

Ordering Information: Si4943BDY—E3
Si4943BDY-T1—E3 (with Tape and Reel)



P-Channel MOSFET



P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	10 secs	Steady State	Unit
Drain-Source Voltage		V_{DS}	–20		V
Gate-Source Voltage		V_{GS}	±20		
Continuous Drain Current (T_J = 150°C)[a]	T_A = 25°C	I_D	–8.4	–6.3	A
	T_A = 70°C		–6.7	–5.1	
Pulsed Drain Current		I_{DM}	–30		
Continuous Source Current (Diode Conduction)[a]		I_S	–1.7	–0.9	
Maximum Power Dissipation[a]	T_A = 25°C	P_D	2.0	1.1	W
	T_A = 70°C		1.3	0.7	
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 ≤ 10 sec	R_{thJA}	46	62.5	°C/W
	Steady State		85	110	
Maximum Junction-to-Foot (Drain)	Steady State	R_{thJF}	26	35	

Notes
a. Surface Mounted on 1 ” x 1” FR4 Board.

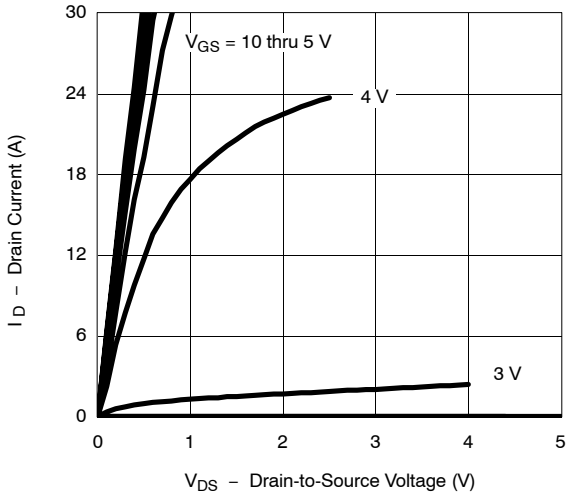
SPECIFICATIONS (T_J = 25°C UNLESS OTHERWISE NOTED)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = −250 μA	−1		−3	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 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 = 55°C			−5	
On-State Drain Current[a]	$I_{D(on)}$	V_{DS} = −5 V, V_{GS} = −10 V	−30			A
Drain-Source On-State Resistance[a]	$r_{DS(on)}$	V_{GS} = −10 V, I_D = −8.4 A		0.016	0.019	Ω
		V_{GS} = −4.5 V, I_D = −6.7 A		0.026	0.031	
Forward Transconductance[a]	g_{fs}	V_{DS} = −10 V, I_D = −8.4 A		20		S
Diode Forward Voltage[a]	V_{SD}	I_S = −1.7 A, V_{GS} = 0 V		−0.75	−1.2	V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = −10 V, V_{GS} = −5 V, I_D = −8.4 A		17	25	nC
Gate-Source Charge	Q_{gs}			5		
Gate-Drain Charge	Q_{gd}			6.7		
Gate Resistance	R_g	f = 1 MHz	6	12	18	Ω
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = −10 V, R_L = 10 Ω I_D ≅ −1 A, V_{GEN} = −10 V, R_g = 6 Ω		11	17	ns
Rise Time	t_r			10	15	
Turn-Off Delay Time	$t_{d(off)}$			94	140	
Fall Time	t_f			60	90	
Source-Drain Reverse Recovery Time	t_{rr}	I_F = −1.7 A, di/dt = 100 A/μs		55	80	

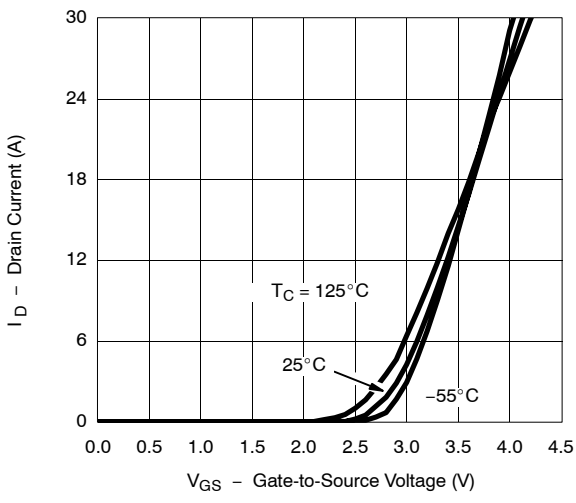
Notes
a. Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

Output Characteristics

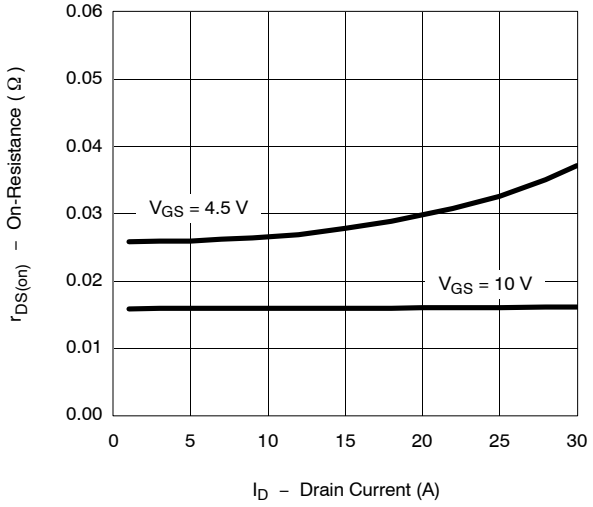


Transfer Characteristics

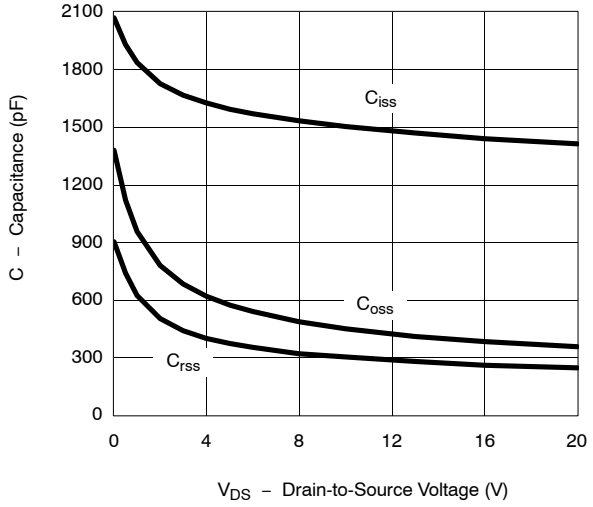


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

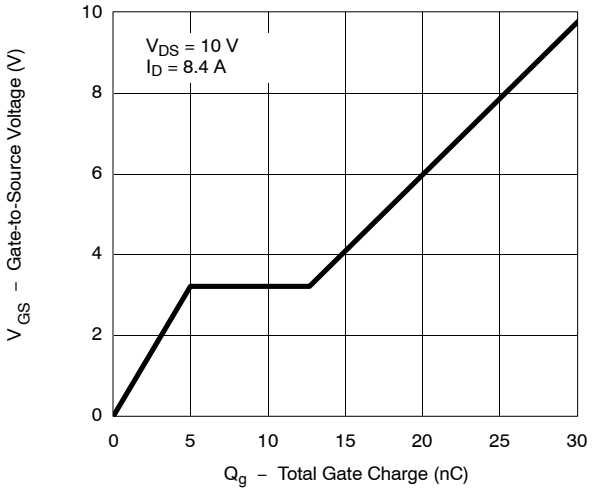
On-Resistance vs. Drain Current



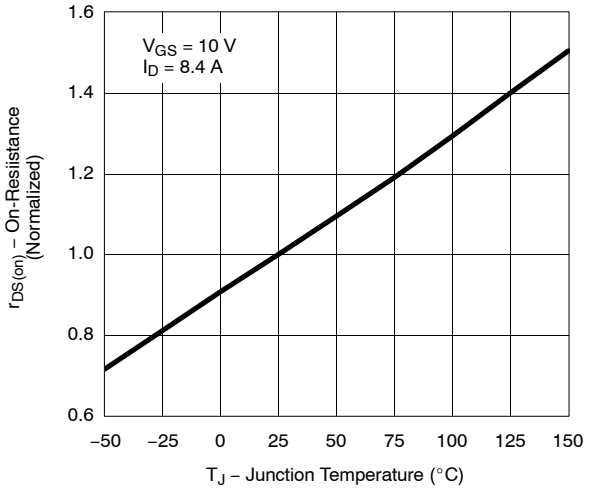
Capacitance



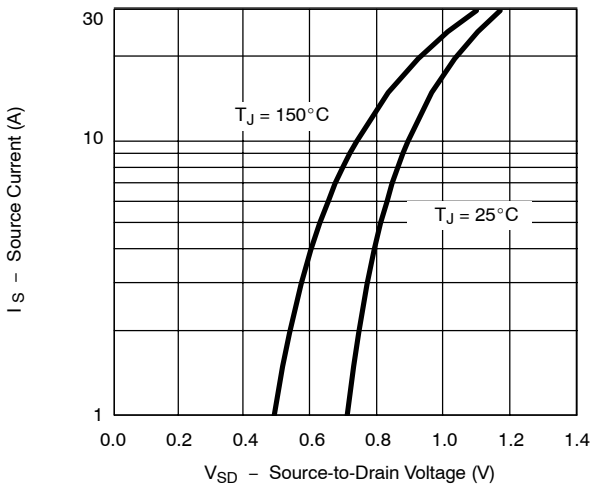
Gate Charge



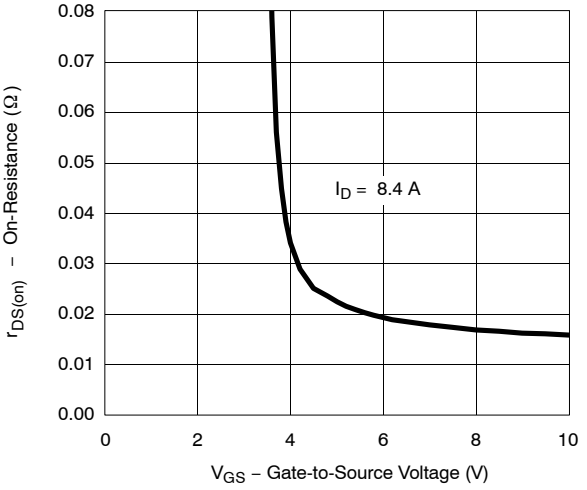
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage

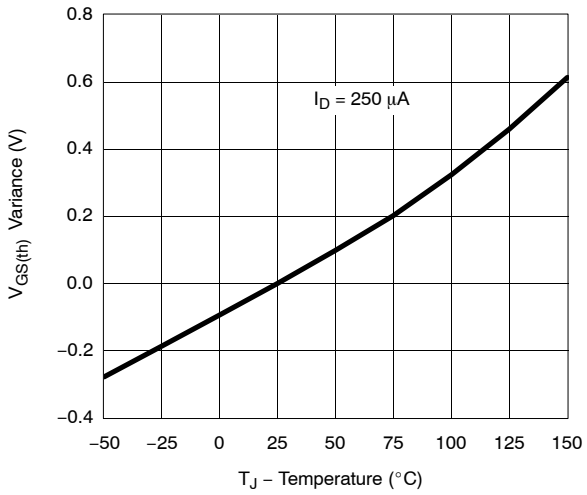


On-Resistance vs. Gate-to-Source Voltage

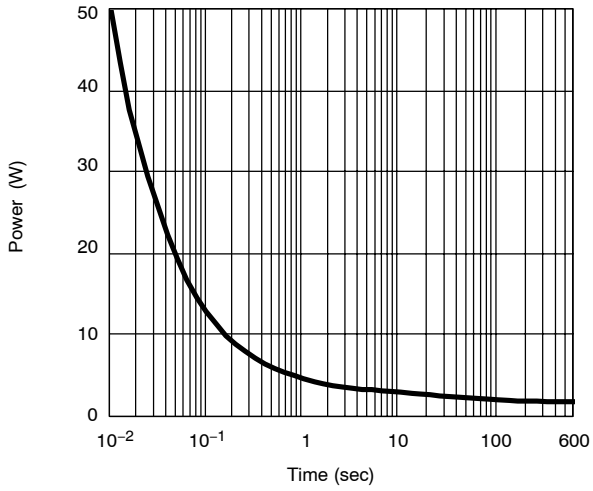


TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

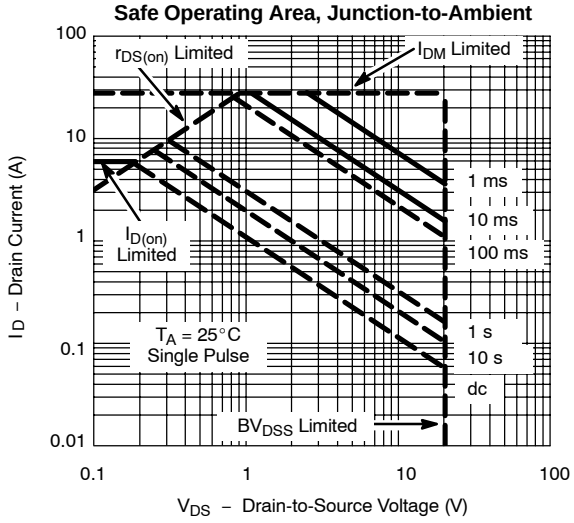
Threshold Voltage



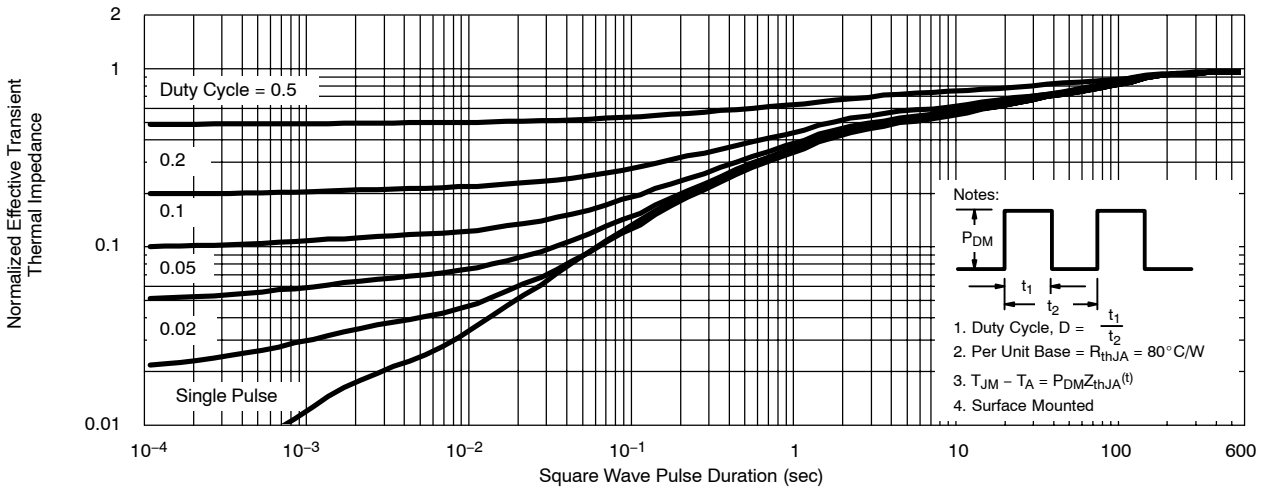
Single Pulse Power



Safe Operating Area, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient



TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)