

P-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY					
V _{DS} (V)	r _{DS(on)} (Ω)	I _D (A)	Q _g (Typ)		
-30	0.018 @ V _{GS} = -10 V	-9.6	-25		
	$0.030 @ V_{GS} = -4.5 V$	-7.5	-25		

s D 8 1 s D 2 7 s D 6 3 G D 4 5 Top View

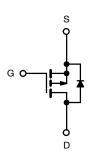
SO-8

FEATURES

- TrenchFET® Power MOSFET
- Advanced High Cell Density Process
- 100% R_g Tested

APPLICATIONS

- Load Switches
 - Notebook PCs
 - Desktop PCs



P-Channel MOSFET

Ordering Information: Si4835BDY Si4835BDY-T1 (with Tape and Reel) Si4835BDY-E3 (Lead (Pb)-Free) Si4835BDY-T1-E3 (Lead (Pb)-Free with Tape and Reel)

ABSOLUTE MAXIMUM RATINGS	(T _A = 25°C UN	LESS OTH	ERWISE NO	TED)		
Parameter		Symbol	10 secs	Steady State	Unit	
Drain-Source Voltage		V _{DS}	-30		V	
Gate-Source Voltage		V _{GS}	±25			
Continuous Drain Current (T,I = 150°C) ^a	$T_A = 25^{\circ}C$	Ι _D	-9.6	-7.4	А	
	$T_A = 70^{\circ}C$	- D	-7.7	-5.9		
Pulsed Drain Current		I _{DM}	-50		~	
continuous Source Current (Diode Conduction) ^a		Is	-2.1 -1.3			
	$T_A = 25^{\circ}C$		2.5	1.5	w	
Maximum Power Dissipation ^a	$T_A = 70^{\circ}C$	P _D	1.6	0.9	vv	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55 to 150		°C	

THERMAL RESISTANCE RATINGS						
Parameter		Symbol	Typical	Maximum	Unit	
	$t \leq 10 \text{ sec}$	R _{thJA}	39	50		
Maximum Junction-to-Ambient ^a	Steady State		70	85	°C/W	
Maximum Junction-to-Foot (Drain)	Steady State	R _{thJF}	18	22		

Notes

a. Surface Mounted on 1" x 1" FR4 Board.

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SPECIFICATIONS (T _J = 25° C UNLESS OTHERWISE NOTED)							
Parameter	Symbol	Test Condition	Min	Тур	Мах	Unit	
Static						•	
Gate Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_D = -250 \ \mu A$	-1.0		-3.0	V	
Gate-Body Leakage	I _{GSS}	V_{DS} = 0 V, V_{GS} = ±25 V			±100	nA	
Zero Gate Voltage Drain Current	I _{DSS}	$V_{DS} = -30 \text{ V}, \text{ V}_{GS} = 0 \text{ V}$ $V_{DS} = -30 \text{ V}, \text{ V}_{GS} = 0 \text{ V}, \text{ T}_{I} = 55^{\circ}\text{C}$			-1 -5	μA	
On-State Drain Current ^a	I _{D(on)}	$V_{DS} \leq -5$ V, V_{GS} = -10 V	-50			А	
	r _{DS(on)}	$V_{GS} = -10 \text{ V}, \ \text{I}_{D} = -9.6 \text{ A}$		0.014 0.018		0	
Drain-Source On-State Resistance ^a		V_{GS} = -4.5 V, I_D = -7.5 A		0.023	0.030	Ω	
Forward Transconductancea	9 _{fs}	$V_{DS} = -15 V$, $I_{D} = -9.6 A$		30		S	
Diode Forward Voltage ^a	V _{SD}	$I_{S} = -2.1 \text{ A}, V_{GS} = 0 \text{ V}$		-0.8	-1.2	V	
Dynamic ^b							
Total Gate Charge	Qg			25	37	nC	
Gate-Source Charge	Q _{gs}	V_{DS} = –15 V, V_{GS} = –5 V, I_{D} = –9.6 A		6.5			
Gate-Drain Charge	Q _{gd}			12.5			
Gate Resistance	Rg		1.0	2.9	4.9	Ω	
Turn-On Delay Time	t _{d(on)}			15	25		
Rise Time	t _r	$V_{DD} = -15 \text{ V}, \text{ R}_{\text{I}} = 15 \Omega$		13	20	ns	
Turn-Off Delay Time	t _{d(off)}	$\begin{array}{l} V_{DD}=-15 \text{ V, } R_L=15 \ \Omega\\ I_D\cong \ -1 \ A, \ V_{GEN}=-10 \ V, \ R_g=6 \ \Omega \end{array}$		60	100		
Fall Time	t _f			45	70		
Source-Drain Reverse Recovery Time	t _{rr}	I _F = -2.1 A, di/dt = 100 A/μs		45	80		

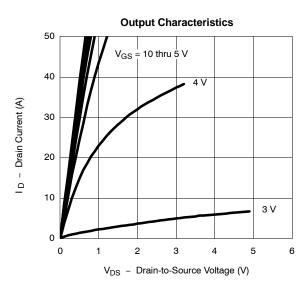
Notes

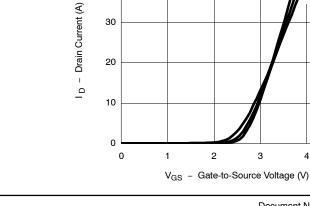
Pulse test; pulse width \leq 300 µs, duty cycle \leq 2%. a.

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

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)





50

40



4

5

125°C

Transfer Characteristics

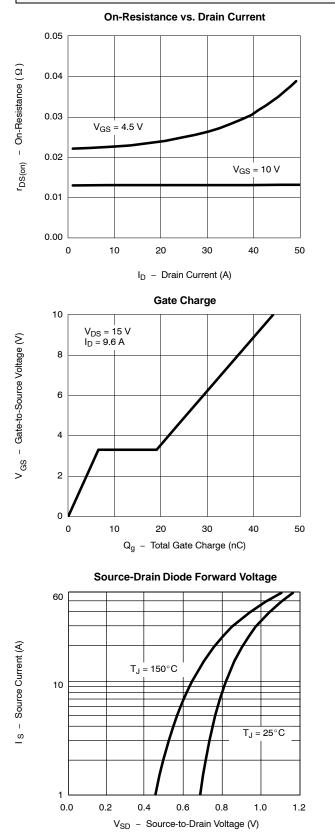
 $T_C = -55^{\circ}C$

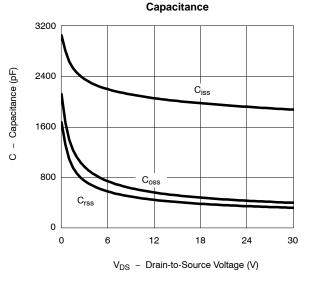
25°C



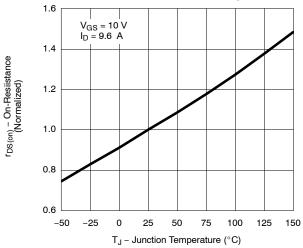
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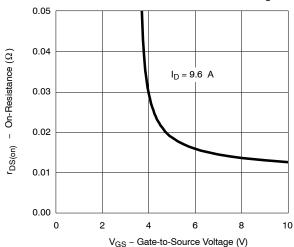




On-Resistance vs. Junction Temperature



On-Resistance vs. Gate-to-Source Voltage

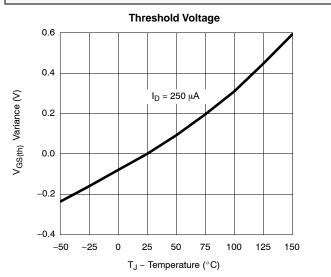


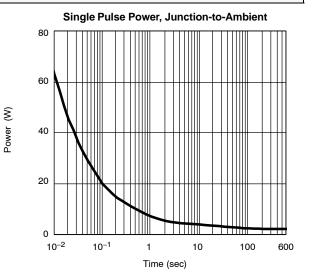
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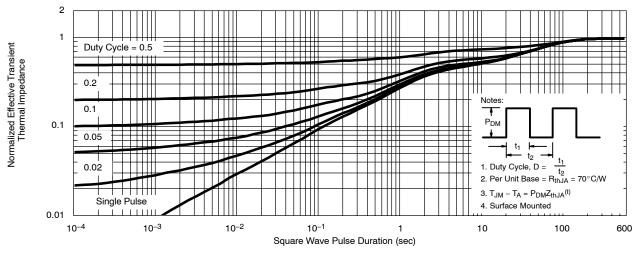
TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)





Safe Operating Area 100 I_{DM} Limited 1 1 1 1 1 1 *r_{DS(on)} Limited P(t) = 0.000110 P(t) = 0.001 ID - Drain Current (A) +++++++P(t) = 0.01 I_{D(on)} 1 Limitéd P(t) = 0.1 P(t) = 1 T_A = 25°C 1.1.1 0.1 P(t) = 10 Single Pulse dc BV_{DSS} Limited 0.01 0.1 10 100 1 V_{DS} - Drain-to-Source Voltage (V) $*V_{GS}$ > minimum V_{GS} at which $r_{DS(on)}$ is specified

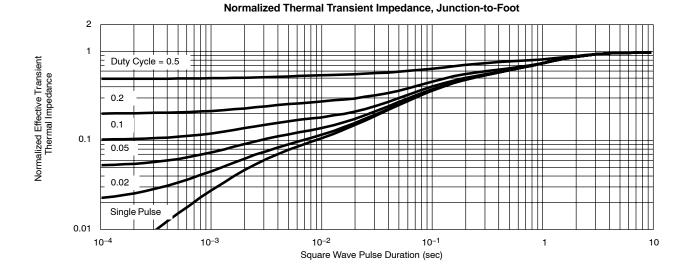
Normalized Thermal Transient Impedance, Junction-to-Ambient





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TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)



Vishay Siliconix maintains worldwide manufacturing capability. Products may be manufactured at one of several qualified locations. Reliability data for Silicon Technology and Package Reliability represent a composite of all qualified locations. For related documents such as package/tape drawings, part marking, and reliability data, see http://www.vishay.com/ppg?72029.



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