

SI4825DY-T1-E3-VB Datasheet P-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY						
V _{DS} (V)	$R_{DS(on)}\left(\Omega\right)$	I _D (A) ^d	Q _g (Typ.)			
- 30	0.011 at V _{GS} = - 10 V	- 11.6	22 nC			
- 30	0.012 at $V_{GS} = -4.5 \text{ V}$	- 10	22 110			

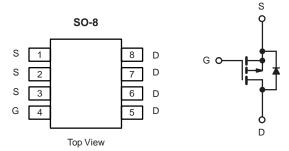
FEATURES

- Halogen-free According to IEC 61249-2-21 **Available**
- Trench Power MOSFET
- 100 % R_g Tested
- 100 % UIS Tested



APPLICATIONS

- · Load Switches
 - Notebook PCs
 - Desktop PCs



P-Channel MOSFET

Parameter	Symbol	Limit	Unit		
Drain-Source Voltage	V _{DS}	- 30	,,		
Gate-Source Voltage		V_{GS}	± 20	V	
	T _C = 25 °C		- 11.6		
Continuous Proin Current (T. – 150 °C)	T _C = 70 °C		- 10.5		
Continuous Drain Current (T _J = 150 °C)	T _A = 25 °C	- I _D	- 8.7 ^{a, b}		
	T _A = 70 °C		- 7.7 ^{a, b}	^	
Pulsed Drain Current	I _{DM}	- 40	Α		
	T _C = 25 °C	,	- 4.6		
Continuous Source-Drain Diode Current	T _A = 25 °C	- I _S	2.0 ^{a, b}		
Avalanche Current	1 0411	I _{AS}	- 20		
Single-Pulse Avalanche Energy	L = 0.1 mH	E _{AS}	20	mJ	
	T _C = 25 °C		5.6		
Maximum Davian Dissipation	T _C = 70 °C		3.6	14/	
Maximum Power Dissipation	T _A = 25 °C	P _D	2.5 ^{a, b}	W	
	T _A = 70 °C		1.6 ^{a, b}		
Operating Junction and Storage Temperature Range	T _J , T _{stq}	- 55 to 150	°C		

THERMAL RESISTANCE RATINGS						
Parameter		Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient ^{a, c}	t ≤ 10 s	R _{thJA}	39	50	°C/W	
Maximum Junction-to-Foot	Steady State	R_{thJF}	18	22	C/VV	

Notes:

- a. Surface mounted on 1" x 1" FR4 board.
- b. t = 10 s.
- c. Maximum under Steady State conditions is 85 °C/W. d. Based on $T_{\rm C}$ = 25 °C.



Parameter	Symbol	Test Conditions	Min.	Тур.	Max.	Unit	
Static							
Drain-Source Breakdown Voltage	V _{DS}	$V_{GS} = 0 \text{ V}, I_D = -250 \mu\text{A}$	- 30			V	
V _{DS} Temperature Coefficient	$\Delta V_{DS}/T_{J}$	I _D = - 250 μA		- 31		mV/°C	
V _{GS(th)} Temperature Coefficient	$\Delta V_{GS(th)}/T_J$			5.5		mv/°C	
Gate-Source Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_{D} = -250 \mu\text{A}$	- 1.0		- 3.0	V	
Gate-Source Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 25 \text{ V}$			± 100	nA	
Zara Cata Valtaga Praia Current	1	V _{DS} = - 30 V, V _{GS} = 0 V			- 1		
Zero Gate Voltage Drain Current	IDSS	V _{DS} = - 30 V, V _{GS} = 0 V, T _J = 55 °C			- 5	μA	
On-State Drain Current ^a	I _{D(on)}	$V_{DS} \ge -10 \text{ V}, V_{GS} = -10 \text{ V}$	- 30			Α	
	D	V _{GS} = - 10 V, I _D = - 10 A		0.011			
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = - 4.5 V, I _D = - 7 A		0.012		Ω	
Forward Transconductance ^a	9 _{fs}	V _{DS} = - 10 V, I _D = - 10 A		23		S	
Dynamic ^b							
Input Capacitance	C _{iss}			1960		pF	
Output Capacitance	C _{oss}	V _{DS} = - 15 V, V _{GS} = 0 V, f = 1 MHz		380			
Reverse Transfer Capacitance	C _{rss}			325			
·		$V_{DS} = -15 \text{ V}, V_{GS} = -10 \text{ V}, I_{D} = -10 \text{ A}$		43	65		
Total Gate Charge			22	33	1		
Gate-Source Charge	Q_{gs}	$V_{DS} = -15 \text{ V}, V_{GS} = -4.5 \text{ V}, I_{D} = -10 \text{ A}$		6		nC	
Gate-Drain Charge	Q_{gd}			11			
Gate Resistance	R _a	f = 1 MHz	0.3	1.3	2.5	Ω	
Turn-On Delay Time	t _{d(on)}			11	22		
Rise Time	ì,	$V_{DD} = -15 \text{ V}, R_{L} = 3 \Omega$		13	25		
Turn-Off DelayTime	t _{d(off)}	$I_D \cong -5 \text{ A}, V_{GEN} = -10 \text{ V}, R_q = 1 \Omega$		32	50		
Fall Time	t _f	j		9	18		
Turn-On Delay Time	t _{d(on)}			44	70	ns	
Rise Time	t _r	V_{DD} = - 15 V, R_L = 3 Ω		100	160		
Turn-Off DelayTime	t _{d(off)}	$I_D \cong -5 \text{ A}, V_{GEN} = -4.5 \text{ V}, R_g = 1 \Omega$		28	50		
Fall Time	t _f	1		15	30		
Drain-Source Body Diode Characterist	ics						
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C			- 4.6	^	
Pulse Diode Forward Current	I _{SM}	-			- 50	Α	
Body Diode Voltage	V _{SD}	I _S = -2 A, V _{GS} = 0 V		- 0.75	- 1.2	V	
Body Diode Reverse Recovery Time	t _{rr}	3 , 163 - 1		28	45	ns	
Body Diode Reverse Recovery Charge	Q _{rr}	1 0 A 31/4/4 400 A/4/2 T 05 00		20	40	nC	
Reverse Recovery Fall Time	t _a	$I_F = -2 \text{ A}, \text{ dI/dt} = 100 \text{ A/}\mu\text{s}, T_J = 25 ^{\circ}\text{C}$		13		1	
Reverse Recovery Rise Time	t _b			15		ns	

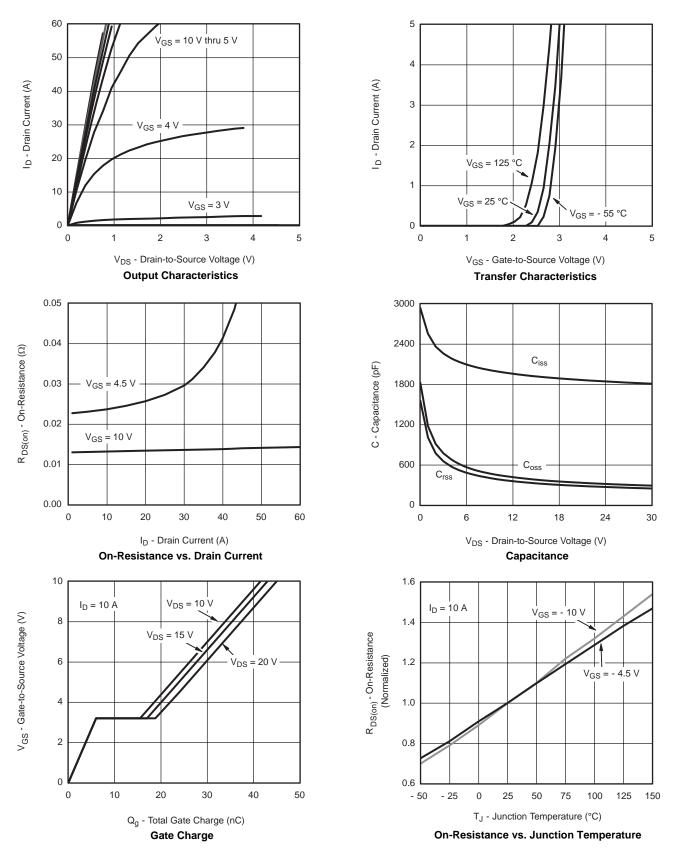
Notes:

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.

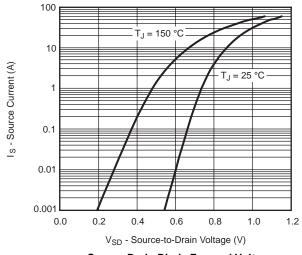
a. Pulse test; pulse width $\leq 300~\mu s,$ duty cycle $\leq 2~\%.$

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

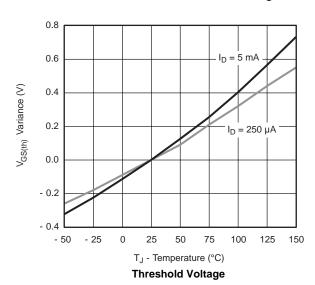




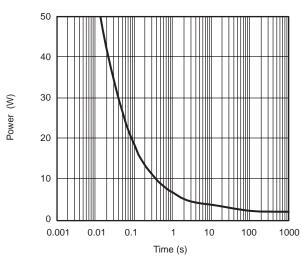




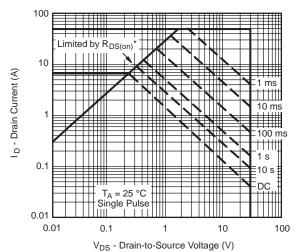




 $\label{eq:VGS} V_{GS} \mbox{ - Gate-to-Source Voltage (V)} \\$ On-Resistance vs. Gate-to-Source Voltage



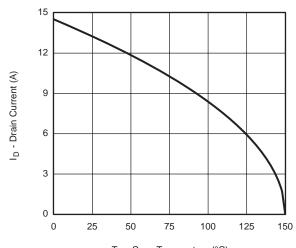
Single Pulse Power, Junction-to-Ambient



* V_{GS} > minimum V_{GS} at which $R_{DS(on)}$ is specified

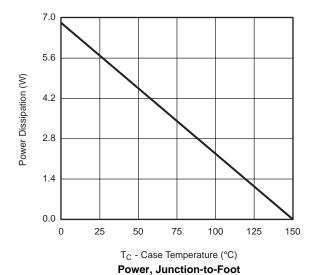
Safe Operating Area

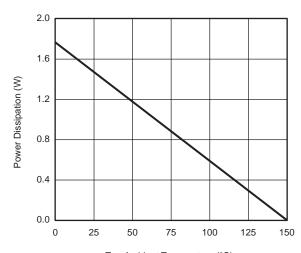




 $T_{\mbox{\scriptsize C}}$ - Case Temperature (°C)

Current Derating*



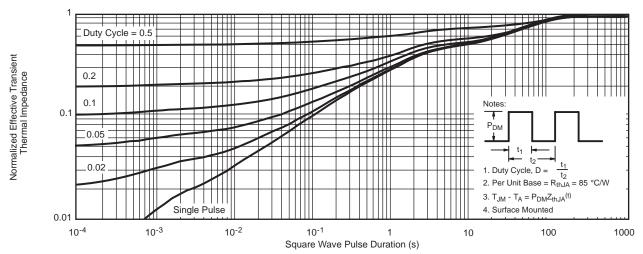


T_A - Ambient Temperature (°C)

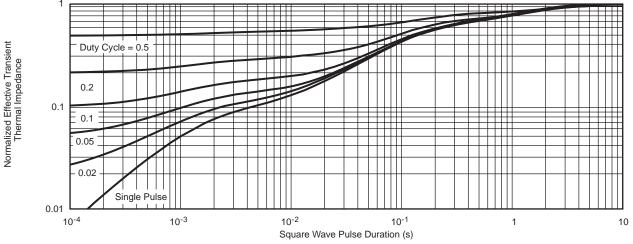
Power Derating, Junction-to-Ambient

^{*} The power dissipation P_D is based on $T_{J(max)} = 150$ °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.





Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Foot

服务热线:400-655-8788 6



SOIC (NARROW): 8-LEADJEDEC Part Number: MS-012







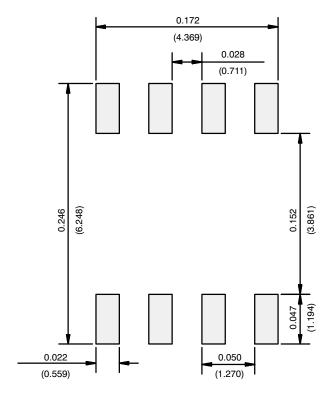
	MILLIM	IETERS	INCHES		
DIM	Min	Max	Min	Max	
Α	1.35	1.75	0.053	0.069	
A ₁	0.10	0.20	0.004	0.008	
В	0.35	0.51	0.014	0.020	
С	0.19	0.25	0.0075	0.010	
D	4.80	5.00	0.189	0.196	
E	3.80	4.00	0.150	0.157	
е	1.27	BSC	0.050 BSC		
Н	5.80	6.20	0.228	0.244	
h	0.25	0.50	0.010	0.020	
L	0.50	0.93	0.020	0.037	
q	0°	8°	0°	8°	
S	0.44	0.64	0.018	0.026	
FCN: C-06527-Rev I 11-Sen-06					

ECN: C-06527-Rev. I, 11-Sep-06

DWG: 5498



RECOMMENDED MINIMUM PADS FOR SO-8



Recommended Minimum Pads Dimensions in Inches/(mm)



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