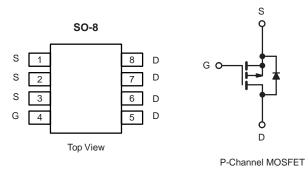


# FDS6675BZ-NL-VB Datasheet P-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY					
V <sub>DS</sub> (V)	R <sub>DS(on)</sub> (Ω)	I <sub>D</sub> (A) <sup>d</sup> Q <sub>g</sub> (Typ.)			
- 30	0.011 at V <sub>GS</sub> = - 10 V	- 11.6	22 nC		
- 30	0.012 at V <sub>GS</sub> = - 4.5 V	- 10	22110		



## **FEATURES**

- Halogen-free According to IEC 61249-2-21 Available
- Trench Power MOSFET
- 100 % R<sub>g</sub> Tested
- 100 % UIS Tested

#### **APPLICATIONS**

- Load Switches
- Notebook PCs
- Desktop PCs



COMPLIANT HALOGEN

FREE Available

Parameter	Symbol	Limit	Uni		
Drain-Source Voltage		V <sub>DS</sub>	- 30	V	
Gate-Source Voltage		V <sub>GS</sub>	± 20		
	T <sub>C</sub> = 25 °C		- 11.6		
Continuous Drain Current ( $T_1 = 150 ^{\circ}C$ )	T <sub>C</sub> = 70 °C		- 10.5		
Continuous Drain Current $(T_j = 150 \text{ C})$	T <sub>A</sub> = 25 °C	I <sub>D</sub>	- 8.7 <sup>a, b</sup>		
	T <sub>A</sub> = 70 °C		- 7.7 <sup>a, b</sup>	•	
Pulsed Drain Current	I <sub>DM</sub>	- 40	— A		
	T <sub>C</sub> = 25 °C	1	- 4.6		
Continuous Source-Drain Diode Current	T <sub>A</sub> = 25 °C	Is	2.0 <sup>a, b</sup>		
Avalanche Current	1 0.4 ml l	I <sub>AS</sub>	- 20		
Single-Pulse Avalanche Energy	L = 0.1 mH	E <sub>AS</sub>	20	mJ	
	T <sub>C</sub> = 25 °C		5.6		
Maximum Dawar Dissinction	T <sub>C</sub> = 70 °C	P <sub>D</sub>	3.6	w	
Maximum Power Dissipation	T <sub>A</sub> = 25 °C	FD	2.5 <sup>a, b</sup>		
	T <sub>A</sub> = 70 °C		1.6 <sup>a, b</sup>		
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stq</sub>	- 55 to 150	°C		

THERMAL RESISTANCE RATINGS						
Parameter		Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient <sup>a, c</sup>	t ≤ 10 s	R <sub>thJA</sub>	39	50	°C/W	
Maximum Junction-to-Foot	Steady State	R <sub>thJF</sub>	18	22	C/W	

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  $T_C = 25$  °C.

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Parameter	Symbol	Test Conditions	Min.	Тур.	Max.	Unit	
Static						l	
Drain-Source Breakdown Voltage	V <sub>DS</sub>	$V_{GS} = 0 V, I_D = -250 \mu A$	- 30			V	
V <sub>DS</sub> Temperature Coefficient	$\Delta V_{DS}/T_{J}$			- 31		m)//9C	
V <sub>GS(th)</sub> Temperature Coefficient	$\Delta V_{GS(th)}/T_J$	I <sub>D</sub> = - 250 μA		5.5		mV/°C	
Gate-Source Threshold Voltage	V <sub>GS(th)</sub>	$V_{DS} = V_{GS}, I_{D} = -250 \ \mu A$	- 1.0		- 3.0	V	
Gate-Source Leakage	I <sub>GSS</sub>	$V_{DS} = 0 V, V_{GS} = \pm 25 V$			± 100	nA	
Zara Cata Valtaga Drain Current	1	$V_{DS} = -30 \text{ V}, \text{ V}_{GS} = 0 \text{ V}$	V <sub>DS</sub> = - 30 V, V <sub>GS</sub> = 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 <sup>a</sup>	I <sub>D(on)</sub>	$V_{DS} \ge -10 \text{ V}, \text{ V}_{GS} = -10 \text{ V}$	- 30			Α	
	_	V <sub>GS</sub> = - 10 V, I <sub>D</sub> = - 10 A		0.011			
Drain-Source On-State Resistance <sup>a</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = - 4.5 V, I <sub>D</sub> = - 7 A		0.012		Ω	
Forward Transconductance <sup>a</sup>	9 <sub>fs</sub>	V <sub>DS</sub> = - 10 V, I <sub>D</sub> = - 10 A		23		S	
Dynamic <sup>b</sup>	•				•		
Input Capacitance	C <sub>iss</sub>			1960			
Output Capacitance	C <sub>oss</sub>	V <sub>DS</sub> = - 15 V, V <sub>GS</sub> = 0 V, f = 1 MHz		380		pF	
Reverse Transfer Capacitance	C <sub>rss</sub>			325			
Total Gate Charge		$V_{DS} = -15 \text{ V}, \text{ V}_{GS} = -10 \text{ V}, \text{ I}_{D} = -10 \text{ A}$		43	65	-	
				22	33		
Gate-Source Charge	Q <sub>gs</sub>	$V_{DS}$ = - 15 V, $V_{GS}$ = - 4.5 V, $I_{D}$ = - 10 A		6		nc	
Gate-Drain Charge	Q <sub>gd</sub>			11			
Gate Resistance	R <sub>g</sub>	f = 1 MHz	0.3	1.3	2.5	Ω	
Turn-On Delay Time	t <sub>d(on)</sub>			11	22		
Rise Time	t <sub>r</sub>	$V_{DD}$ = - 15 V, $R_L$ = 3 $\Omega$		13	25		
Turn-Off DelayTime	t <sub>d(off)</sub>	$I_D\cong$ - 5 A, $V_{GEN}$ = - 10 V, $R_g$ = 1 $\Omega$		32	50		
Fall Time	t <sub>f</sub>			9	18	ns	
Turn-On Delay Time	t <sub>d(on)</sub>			44	70	115	
Rise Time	t <sub>r</sub>	$V_{DD}$ = - 15 V, $R_L$ = 3 $\Omega$		100	160	-	
Turn-Off DelayTime	t <sub>d(off)</sub>	$\text{I}_\text{D}\cong$ - 5 A, $\text{V}_\text{GEN}$ = - 4.5 V, $\text{R}_\text{g}$ = 1 $\Omega$		28	50		
Fall Time	t <sub>f</sub>			15	30		
Drain-Source Body Diode Characterist	ics						
Continuous Source-Drain Diode Current	۱ <sub>S</sub>	T <sub>C</sub> = 25 °C			- 4.6	A	
Pulse Diode Forward Current	I <sub>SM</sub>				- 50	A	
Body Diode Voltage	V <sub>SD</sub>	I <sub>S</sub> = - 2 A, V <sub>GS</sub> = 0 V		- 0.75	- 1.2	V	
Body Diode Reverse Recovery Time	t <sub>rr</sub>			28	45	ns	
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>	I = 2 A dl/dt = 100 A/up T = 25 °C		20	40	nC	
Reverse Recovery Fall Time	t <sub>a</sub>	- I <sub>F</sub> = - 2 A, dl/dt = 100 A/μs, T <sub>J</sub> = 25 °C		13		200	
Reverse Recovery Rise Time	t <sub>b</sub>			15		ns	

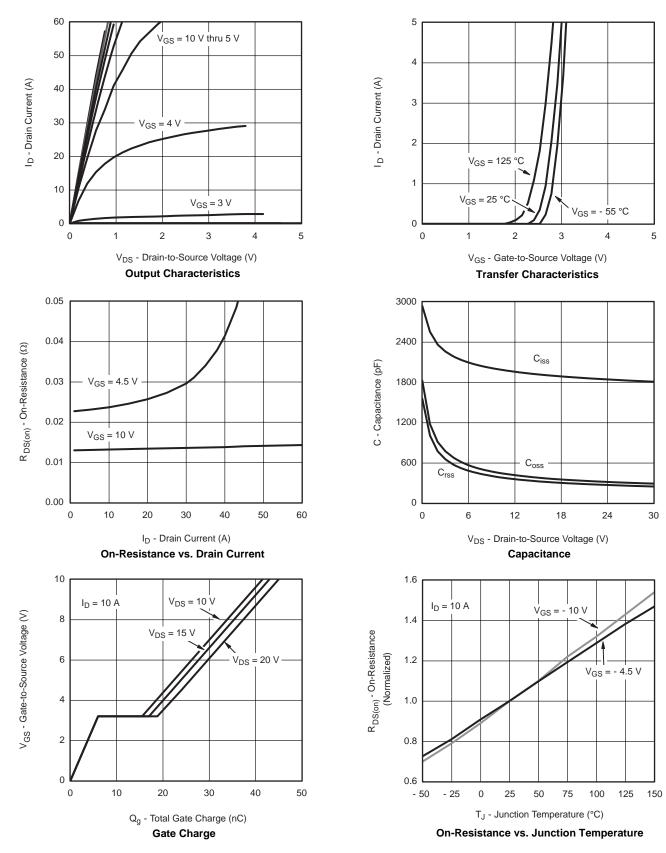
Notes:

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

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

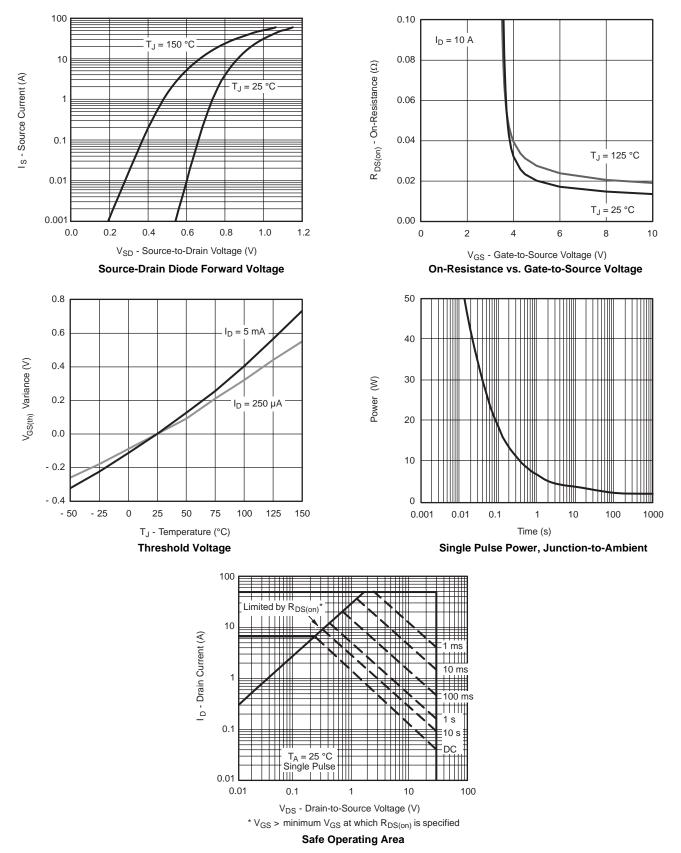
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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



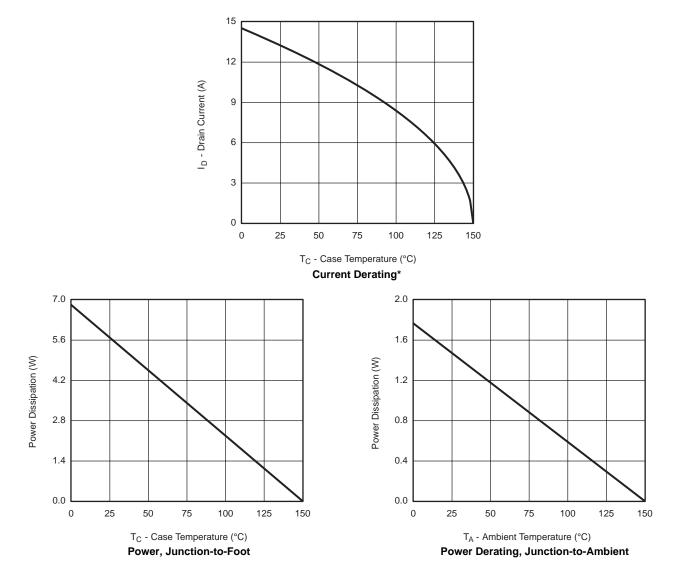


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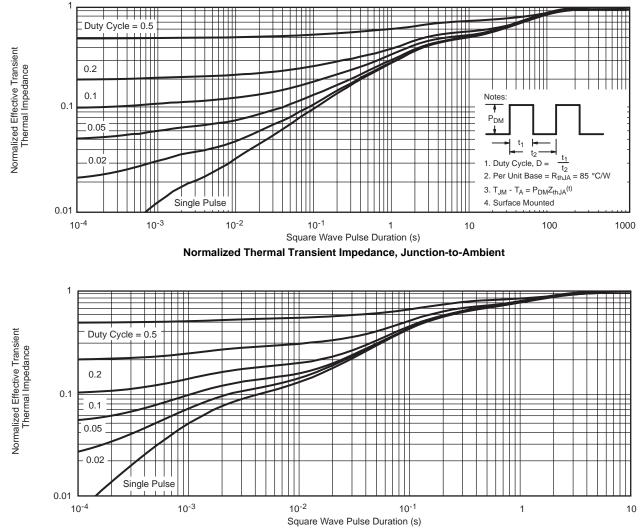






\* The power dissipation  $P_D$  is based on  $T_{J(max)}$  = 150 °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package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



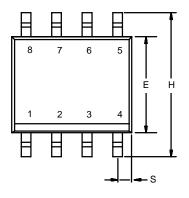


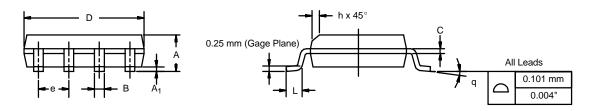
Normalized Thermal Transient Impedance, Junction-to-Foot



# SOIC (NARROW): 8-LEAD

JEDEC Part Number: MS-012

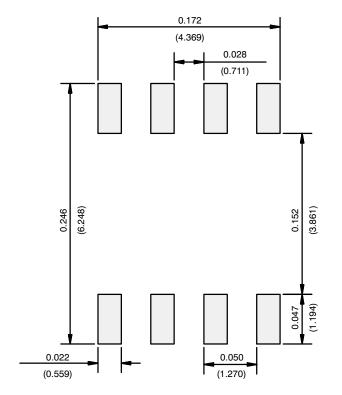




	MILLIMETERS		INC	HES	
DIM	Min	Max	Min	Max	
A	1.35	1.75	0.053	0.069	
A <sub>1</sub>	0.10	0.20	0.004	0.008	
В	0.35	0.51	0.014	0.020	
С	0.19	0.25	0.0075	0.010	
D	4.80	5.00	0.189	0.196	
E	3.80	4.00	0.150	0.157	
е	1.27	BSC	0.050 BSC		
н	5.80	6.20	0.228	0.244	
h	0.25	0.50	0.010	0.020	
L	0.50	0.93	0.020	0.037	
q	0°	8°	0°	8°	
S	0.44	0.64	0.018	0.026	
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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