

SSW50N06-VB Datasheet N-Channel 60-V (D-S) MOSFET

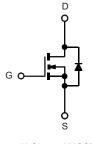
PRODUCT	SUMMARY	
V _{DS} (V)	R_{DS(on)} (Ω)	I _D (A) ^a
60	0.011 at V _{GS} = 10 V	60
00	0.013 at V _{GS} = 4.5 V	50

FEATURES

- 175 °C Junction Temperature
- Trench Power MOSFET
- Material categorization:







N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T _C = 25	°C, unless other	vise noted)			
Parameter		Symbol	Limit	Unit	
Gate-Source Voltage		V _{GS}	± 20	V	
Continuous Durin Compart (T $= 475$ °C)h	T _C = 25 °C		60		
Continuous Drain Current (T _J = 175 °C) ^b	T _C = 100 °C		50ª		
Pulsed Drain Current		I _{DM}	200	A	
Continuous Source Current (Diode Conduction)		۱ _S	50ª		
Avalanche Current		I _{AS}	50		
Single Avalanche Energy (Duty Cycle \leq 1 %)	L = 0.1 mH	E _{AS}	125	mJ	
Maximum Power Dissipation	T _C = 25 °C		136	w	
	T _A = 25 °C				
Operating Junction and Storage Temperature Range		T _J , T _{stg}	- 55 to 175	°C	

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum lumation to Amelianta	t ≤ 10 sec	R	15	18	
Maximum Junction-to-Ambient ^a	Steady State	R _{thJA}	40	50 °C/W	
Maximum Junction-to-Case		R _{thJC}	0.85	1.1	

Notes:

a. Package limited.

b. Surface mounted on 1" x 1" FR4 board.

c. $t \leq 10$ s.

SPECIFICATIONS (T _J = 25 °C	, unless oth	erwise noted)					
Parameter	Symbol	Test Conditions	Min.	Typ.ª	Max.	Unit	
Static							
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0 V, I _D = 250 μA	60			V	
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	
		V _{DS} = 60 V, V _{GS} = 0 V			1		
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V, T _J = 125 °C			50	μΑ	
		V _{DS} = 60 V, V _{GS} = 0 V, T _J = 175 °C			250		
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	60			А	
		V _{GS} = 10 V, I _D = 20 A		0.011			
	Б	V _{GS} = 10 V, I _D = 20 A, T _J = 125 °C		0.014		Ω	
Drain-Source On-State Resistance ^b	R _{DS(on)}	V _{GS} = 10 V, I _D = 20 A, T _J = 175 °C		0.018			
		V _{GS} = 4.5 V, I _D = 15 A		0.013			
Forward Transconductance ^b	9 _{fs}	V _{DS} = 15 V, I _D = 20 A		60		S	
Dynamic							
Input Capacitance	C _{iss}			4200			
Output Capacitance	C _{oss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		570		pF	
Reverse Transfer Capacitance	C _{rss}			325			
Total Gate Charge ^c	Qg			47			
Gate-Source Charge ^c	Q _{gs}	V_{DS} = 30 V, V_{GS} = 10 V, I_{D} = 50 A		10		nC	
Gate-Drain Charge ^c	Q _{gd}			12			
Turn-On Delay Time ^c	t _{d(on)}			10	20		
Rise Time ^c	t _r	V_{DD} = 30 V, R _L = 0.6 Ω		15	25	ns	
Turn-Off Delay Time ^c	t _{d(off)}	$I_D \cong 50 \text{ A}, \text{ V}_{\text{GEN}}$ = 10 V, R_g = 2.5 Ω		35	50		
Fall Time ^c	t _f			20	30		
Source-Drain Diode Ratings and Cha	aracteristics (T _C = 25 °C)					
Pulsed Current	I _{SM}				60	А	
Diode Forward Voltage	V _{SD}	I _F = 20 A, V _{GS} = 0 V		1	1.5	V	
Reverse Recovery Time	t _{rr}	I _F = 20 A, di/dt = 100 A/μs		45	100	ns	

Notes:

a. For design aid only; not subject to production testing.

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

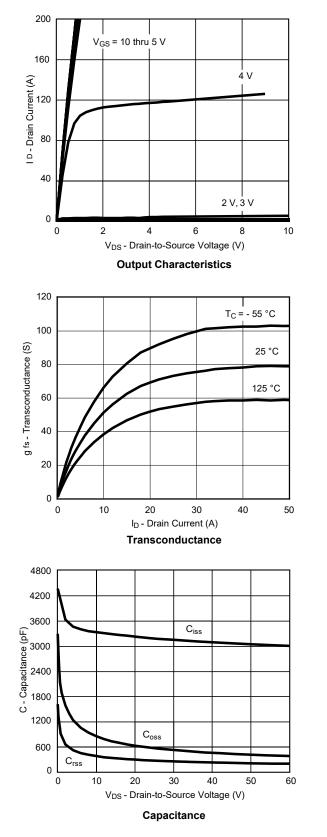
c. Independent of operating temperature.

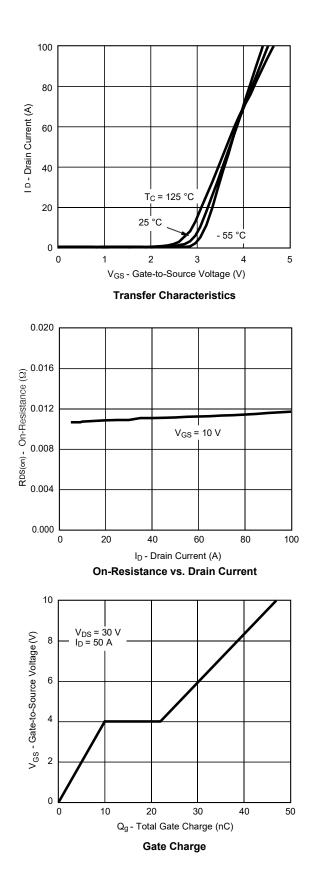
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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

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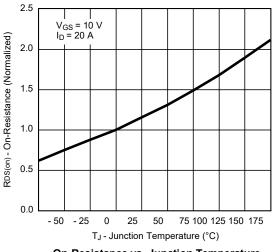
TYPICAL CHARACTERISTICS (25 °C unless noted)



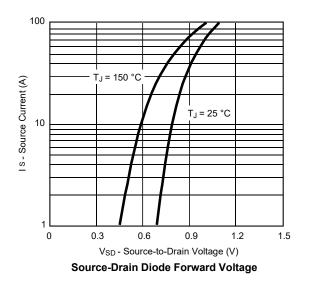




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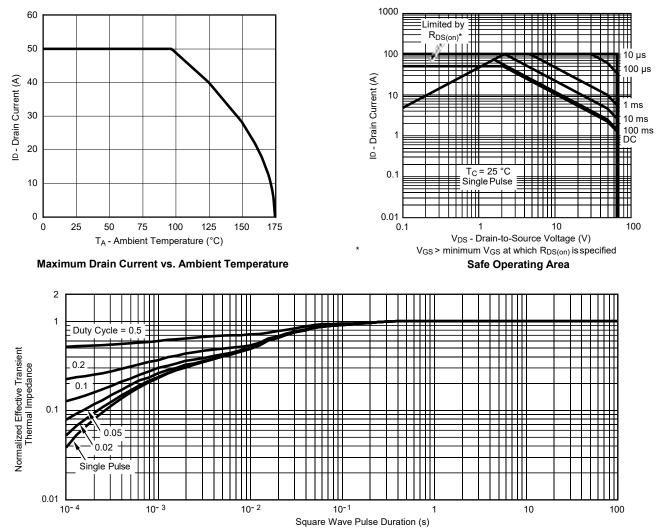


On-Resistance vs. Junction Temperature



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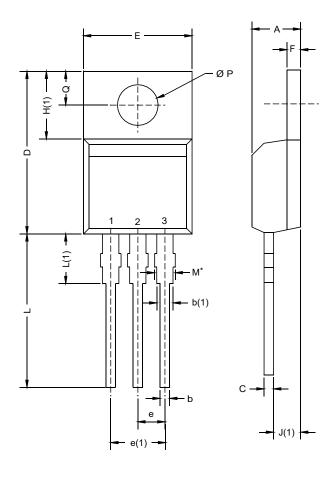
THERMAL RATINGS



Normalized Thermal Transient Impedance, Junction-to-Case



TO-220AB



DIM.	MILLIM	ETERS	INC	INCHES		
	MIN.	MAX.	MIN.	MAX.		
А	4.24	4.65	0.167	0.183		
b	0.69	1.02	0.027	0.040		
b(1)	1.14	1.78	0.045	0.070		
с	0.36	0.61	0.014	0.024		
D	14.33	15.85	0.564	0.624		
Е	9.96	10.52	0.392	0.414		
е	2.41	2.67	0.095	0.105		
e(1)	4.88	5.28	0.192	0.208		
F	1.14	1.40	0.045	0.055		
H(1)	6.10	6.71	0.240	0.264		
J(1)	2.41	2.92	0.095	0.115		
L	13.36	14.40	0.526	0.567		
L(1)	3.33	4.04	0.131	0.159		
ØР	3.53	3.94	0.139	0.155		
Q	2.54	3.00	0.100	0.118		
ECN: X15- DWG: 603	0364-Rev. C, 1	14-Dec-15				

Note

• M* = 0.052 inches to 0.064 inches (dimension including protrusion), heatsink hole for HVM



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