

IPP80N06S2-09-VB Datasheet

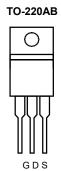
N-Channel 60 V (D-S) MOSFET

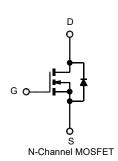
PRODUCT SUMMARY				
V _{DS}	60	V		
R _{DS(on)} V _{GS} = 10 V	5	mΩ		
I _D	120	Α		
Configuration	Single			

FEATURES

- 175 °C Junction Temperature
- TrenchFET® Power MOSFET
- Material categorization:







ABSOLUTE MAXIMUM RATINGS (T _C = 25 °C, unless otherwise noted)						
Parameter	Symbol	Limit	Unit			
Gate-Source Voltage		V _{GS}	± 20	V		
Continuous Drain Current (T _J = 175 °C) ^b	T _C = 25 °C		120			
	T _C = 100 °C	- I _D	90			
Pulsed Drain Current	d Drain Current		350	А		
Continuous Source Current (Diode Conduction)		I _S	70 ^a			
Avalanche Current		I _{AS}	50			
Single Avalanche Energy (Duty Cycle ≤ 1 %)	L = 0.1 mH	E _{AS}	125	mJ		
Maximum Power Dissipation	T _C = 25 °C	- P _D	136	W		
	T _A = 25 °C] 'D	3 ^b , 8.3 ^{b, c}			
Operating Junction and Storage Temperature Range		T _J , T _{stg}	- 55 to 175	°C		

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

Notes:

- a. Package limited.
- b. Surface mounted on 1" x 1" FR4 board.
- c. $t \le 10 \text{ s}$.



Parameter	Symbol	Test Conditions	Min.	Typ.a	Max.	Unit	
Static			ı				
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0 V, I _D = 250 μA	250 μA 60				
Gate Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_D = 250 \mu A$	2		4	V	
Gate-Body Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA	
		V _{DS} = 60 V, V _{GS} = 0 V	1		1		
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60 V, V _{GS} = 0 V, T _J = 125 °C			50 μA		
		V _{DS} = 60 V, V _{GS} = 0 V, T _J = 175 °C			250	1	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	60			Α	
		V _{GS} = 10 V, I _D = 20 A		5			
	_D	V _{GS} = 10 V, I _D = 20 A, T _J = 125 °C		10			
Drain-Source On-State Resistance ^b	R _{DS(on)}	V _{GS} = 10 V, I _D = 20 A, T _J = 175 °C		15		mΩ	
		V _{GS} = 7.5 V, I _D = 15 A		8		†	
Forward Transconductance ^b	9 _{fs}	V _{DS} = 15 V, I _D = 20 A		60		S	
Dynamic			'	'	'		
Input Capacitance	C _{iss}			6800			
Output Capacitance	C _{oss}	$V_{GS} = 0 \text{ V}, V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$		570		pF	
Reverse Transfer Capacitance	C _{rss}			325			
Total Gate Charge ^c	Qg			47	70		
Gate-Source Charge ^c	Q _{gs}	$V_{DS} = 30 \text{ V}, V_{GS} = 10 \text{ V}, I_{D} = 50 \text{ A}$		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		
Turn-Off Delay Time ^c	t _{d(off)}	$I_D \cong 50$ A, V_{GEN} = 10 V, R_g = 2.5 Ω		35	50	ns	
Fall Time ^c	t _f			20	30		
Source-Drain Diode Ratings and Cha	aracteristics (T _C = 25 °C)		•			
Pulsed Current	I _{SM}			350		Α	
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	

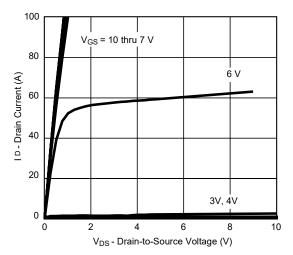
Notes:

- a. For design aid only; not subject to production testing. b. Pulse test; pulse width $\leq 300~\mu s,$ duty cycle $\leq 2~\%.$
- c. Independent of operating temperature.

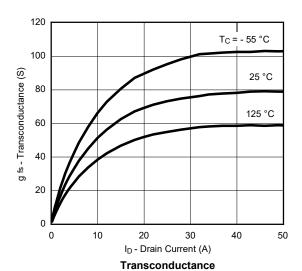
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure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



TYPICAL CHARACTERISTICS (25 °C unless noted)



Output Characteristics

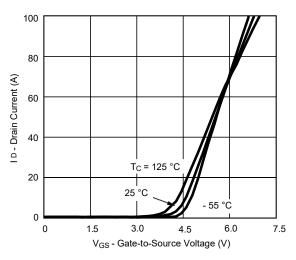


C - Capacitance (pF) 2000 2000 2000 2000 2000 2000 C_{oss} 1000 C_{rss}

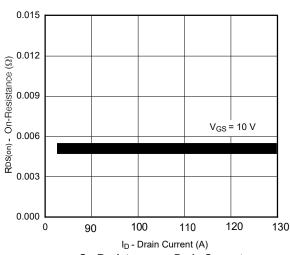
20

 C_{iss}

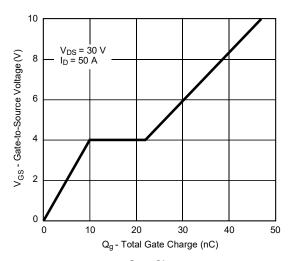
V_{DS} - Drain-to-Source Voltage (V) Capacitance



Transfer Characteristics



On-Resistance vs. Drain Current



Gate Charge

8000

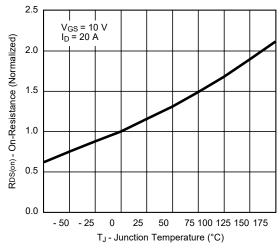
7000

6000

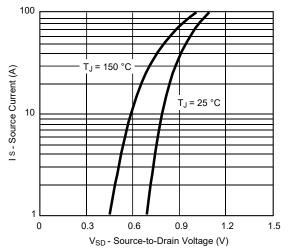
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TYPICAL CHARACTERISTICS (25 °C unless noted)



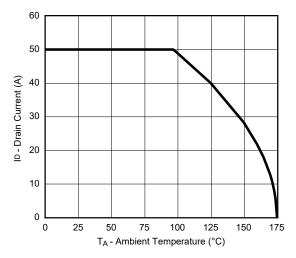
On-Resistance vs. Junction Temperature



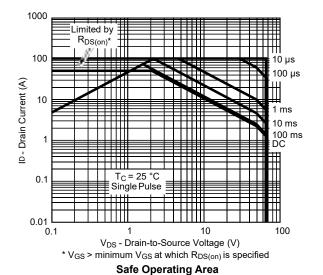
Source-Drain Diode Forward Voltage

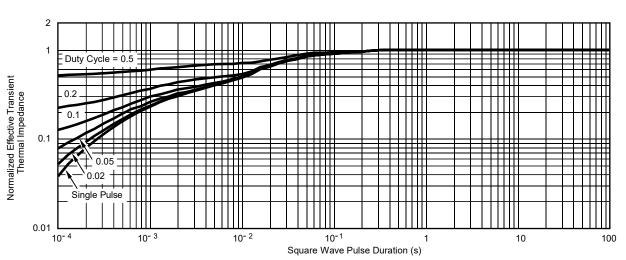


THERMAL RATINGS



Maximum Drain Current vs. Ambient Temperature

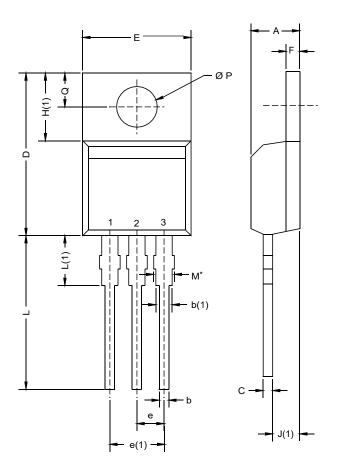




Normalized Thermal Transient Impedance, Junction-to-Case



TO-220AB



	MILLIN	IETERS	INC	HES	
DIM.	MIN.	MAX.	MIN.	MAX.	
Α	4.25	4.65	0.167	0.183	
b	0.69	1.01	0.027	0.040	
b(1)	1.20	1.73	0.047	0.068	
С	0.36	0.61	0.014	0.024	
D	14.85	15.49	0.585	0.610	
E	10.04	10.51	0.395	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)	6.09	6.48	0.240	0.255	
J(1)	2.41	2.92	0.095	0.115	
L	13.35	14.02	0.526	0.552	
L(1)	3.32	3.82	0.131	0.150	
ØР	3.54	3.94	0.139	0.155	
Q	2.60	3.00	0.102	0.118	
ECN: X12-0208-Rev. N, 08-Oct-12 DWG: 5471					

Notes

* M = 1.32 mm to 1.62 mm (dimension including protrusion) Heatsink hole for HVM



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