

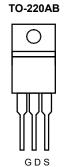
FDP3205-VB Datasheet N-Channel 60 V (D-S) MOSFET

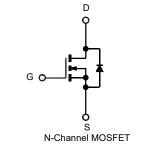
PRODUCT SUMMARY		
V _{DS}	60	V
R _{DS(on)} V _{GS} = 10 V	5	mΩ
ID	120	А
Configuration	Sin	gle

FEATURES

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







ABSOLUTE MAXIMUM RATINGS (T _C = 25	°C, unless other	vise noted)			
Parameter		Symbol	Limit	Unit	
Gate-Source Voltage		V _{GS}	± 20	V	
Continuous Drain Current (T 175 °C)b	T _C = 25 °C	1-	120		
Continuous Drain Current (T _J = 175 °C) ^b	T _C = 100 °C	I _D	90		
Pulsed Drain Current		I _{DM}	350	A	
Continuous Source Current (Diode Conduction)		I _S	70 ^a		
Avalanche Current		I _{AS}	50		
Single Avalanche Energy (Duty Cycle \leq 1 %)L = 0.1 mH		E _{AS}	125	mJ	
Mariana Diania di sa	T _C = 25 °C	PD	136	w	
Maximum Power Dissipation	T _A = 25 °C		3 ^b , 8.3 ^{b, c}	l vv	
Operating Junction and Storage Temperature Range	•	T _J , T _{stg}	- 55 to 175	°C	

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^a	$t \le 10 \text{ sec}$	R _{thJA}	15	18	°C/W
	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. $t \leq 10$ s.

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Parameter	Symbol	Test Conditions	Min.	Typ.ª	Max.	Unit
Static			1	1	<u> </u>	
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0 V, I _D = 250 μA	60			V
Gate Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_{D} = 250 \ \mu A$	2		4	v
Gate-Body Leakage	I _{GSS}	$V_{DS} = 0 V, V_{GS} = \pm 20 V$			± 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	μA
		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		5		
	D	V_{GS} = 10 V, I _D = 20 A, T _J = 125 °C		10		mO
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	g _{fs}	V _{DS} = 15 V, I _D = 20 A		60		S
Dynamic					· · · · · · · · · · · · · · · · · · ·	
Input Capacitance	C _{iss}			6800		
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	70	
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	tr	V_{DD} = 30 V, R _L = 0.6 Ω		15	25	20
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		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:

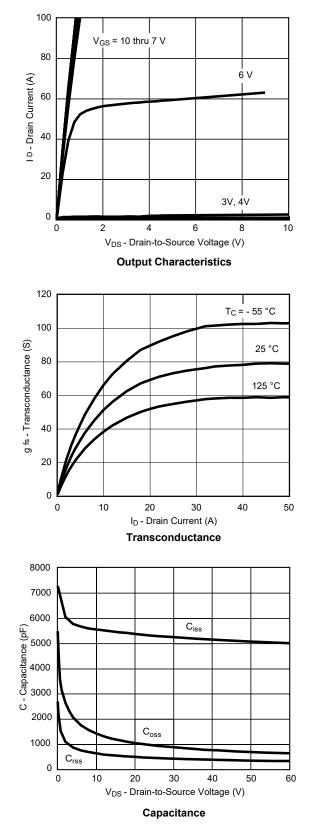
a. For design aid only; not subject to production testing. b. Pulse test; pulse width \leq 300 µs, duty cycle \leq 2 %.

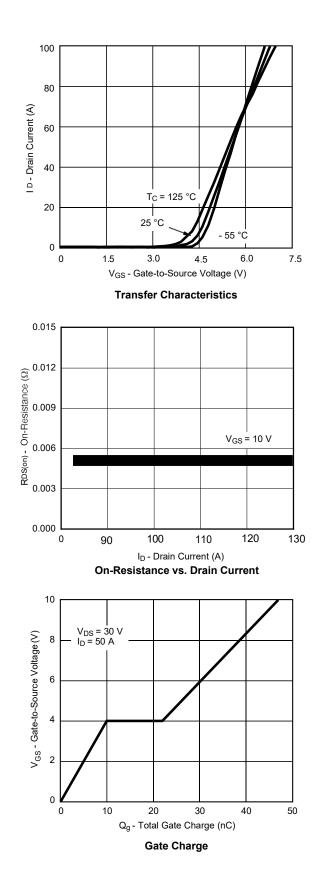
c. Independent of operating temperature.

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)



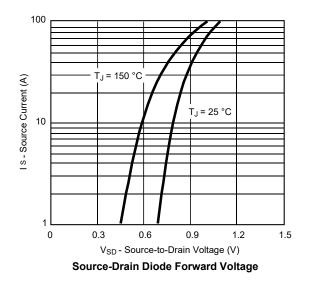




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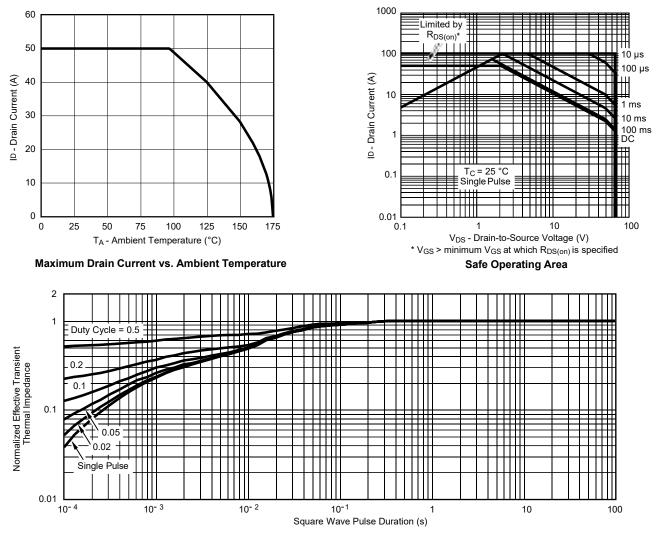


On-Resistance vs. Junction Temperature



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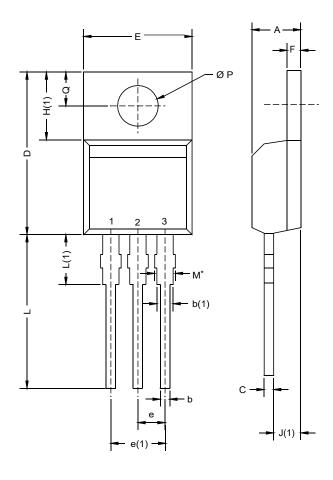
THERMAL RATINGS



Normalized Thermal Transient Impedance, Junction-to-Case



TO-220AB



MILLIN		IETERS	INC	HES	
DIM.	MIN.	MAX.	MIN.	MAX.	
А	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	
Е	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- DWG: 547	0208-Rev. N, 1	08-Oct-12			

Notes

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



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