

20V SOT26 N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	Max R _{DS(ON)}	Max I _D T _A = +25°C
	0.040Ω @ V _{GS} = 4.5V	5.4A
20V	0.055Ω @ V _{GS} = 2.5V	4.6A
	0.075Ω @ V _{GS} = 1.8V	4.0A

Description and Applications

This new generation trench MOSFET from Zetex features low onresistance achievable with low gate drive.

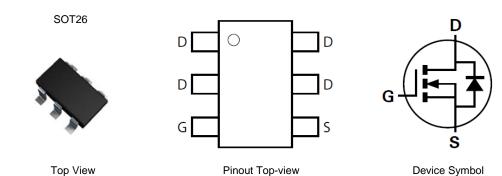
- DC DC Converters
- Power Management Functions
- Disconnect Switches
- Motor Control

Features and Benefits

- Low On-resistance
- Fast Switching Speed
- Low Gate Drive Capability
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)

Mechanical Data

- Case: SOT26
- Case Material: Molded Plastic, "Green" Molding Compound.
 UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Annealed over Copper Leadframe.
 Solderable per MIL-STD-202, Method 208 (3)
- Weight: 0.015 grams (Approximate)



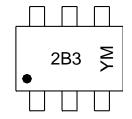
Ordering Information (Note 4)

Part Number	Reel Size (inch)	Tape Width (mm)	Quantity Per Reel
ZXMN2B03E6TA	7	8	3000

Notes:

- 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
- 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- 4. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



2B3 = Product Type Marking Code YM = Date Code Marking Y or \overline{Y} = Year (ex: C = 2015) M or \overline{M} = Month (ex: 9 = September)

Date Code Key

Year	2015	5	2016	2017	2018	2019	2020	202	1 20	22	2023	2024	2025
Code	С		D	Е	F	G	Н		,	J	K	L	М
Montl	n	Jan	Fek	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code)	1	2	3	4	5	6	7	8	9	0	N	D



Maximum Ratings (@ $T_A = +25$ °C, unless otherwise specified.)

	Characteristic		Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	20	V
Gate-Source Voltage			V _{GS}	±8	V
		$T_A = +25^{\circ}C \text{ (Note 6)}$		5.4	
Continuous Drain Current	$V_{GS} = 4.5V$	$T_A = +70^{\circ}C \text{ (Note 6)}$	l _D	4.3	Α
		$T_A = +25^{\circ}C \text{ (Note 5)}$		4.3	
Pulsed Drain Current (Note 7)			I _{DM}	26	Α
Continuous Source Current (Body Diode) (Note 6)			Is	2.8	A
Pulsed Source Current (Body	Diode) (Note	7)	I _{SM}	26	A

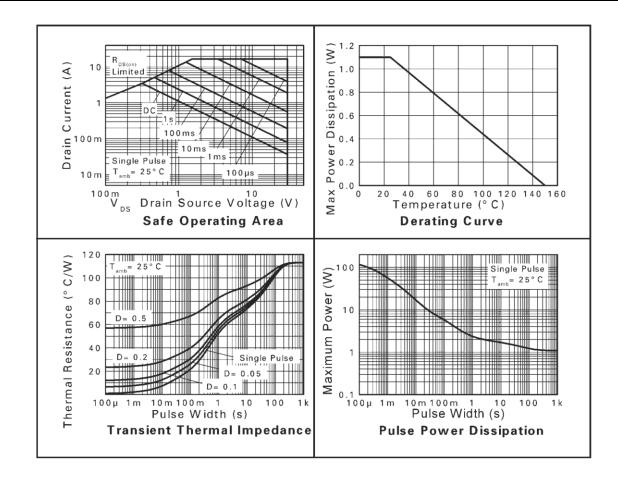
Thermal Characteristics (@TA = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation at T _A = +25°C (Note 5) Linear derating factor (Note 5)	P _D	1.1 8.8	W mW/°C
Power Dissipation at T _A = +25°C (Note 6) Linear derating factor (Note 6)	P _D	1.7 13.7	W mW/°C
Junction to Ambient (Note 5)	$R_{ hetaJA}$	113	°C/W
Junction to Ambient (Note 6)	$R_{ heta JA}$	73	°C/W
Operating and Storage Temperature Range	TJ, T _{STG}	-55 to +150	°C

Notes:

- 5. For a device surface mounted on 25mm x 25mm FR-4 PCB with high coverage of single sided 1oz copper, in still air conditions.
- 6. For a device surface mounted on FR-4 PCB measured at $t \le 10$ secs.
- 7. Repetitive rating 25mm x 25mm FR-4 PCB, D = 0.02, pulse width 300µs pulse width limited by maximum junction temperature.

Thermal Characteristics





Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

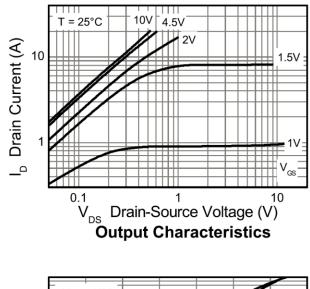
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS							
Drain-source Breakdown Voltage	BV _{DSS}	20	_	_	V	$I_D = 250 \mu A, V_{GS} = 0V$	
Zero Gate Voltage Drain Current	I _{DSS}	_	_	1	μΑ	$V_{DS} = 20V, V_{GS} = 0V$	
Gate-body Leakage	I _{GSS}	-	_	100	nA	$V_{GS} = \pm 8V, V_{DS} = 0V$	
Diode Forward Voltage (Note 8)	V _{SD}	_	0.67	0.95	V	$T_J = +25^{\circ}C$, $I_S = 1.8A$, $V_{GS} = 0V$	
ON CHARACTERISTICS			•				
Gate-source Threshold Voltage	$V_{GS(th)}$	0.4	_	1.0	V	$I_D = 250 \mu A, V_{DS} = V_{GS}$	
				0.040		$V_{GS} = 4.5V, I_D = 4.3A$	
Static Drain-source On-state Resistance (Note 8)	R _{DS(ON)}	_	_	0.055	Ω	$V_{GS} = 2.5V, I_D = 3.7A$	
,	, ,			0.075		V _{GS} = 1.8V, I _D = 3.2A	
Forward Transconductance (Notes 8 & 10)	9 _{fs}	-	13.5	_	S	$V_{DS} = 10V, I_D = 4.3A$	
DYNAMIC CHARACTERISTICS (Notes 9 & 10)							
Input Capacitance	C _{iss}		1160	_	pF	V 40V V 0V	
Output Capacitance	Coss	_	210	_	pF	$V_{DS} = 10V, V_{GS} = 0V$ f = 1MHz	
Reverse Transfer Capacitance	Crss	_	136	_	pF	I = IIVIMZ	
Total Gate Charge	Qq	-	14.5	_	nC	15/1/ 10/1	
Gate-source Charge	Q _{gs}		2.0	_	nC	$V_{GS} = 4.5V, V_{DS} = 10V$	
Gate-drain Charge	Q_{gd}	-	2.8	_	nC	$I_D = 4.3A$	
Reverse Recovery Time (Note 10)	t _{rr}		10.8	_	ns	$T_J = +25^{\circ}C$, $I_F = 2.8A$,	
Reverse Recovery Charge (Note 10)	Qrr	-	3.4	_	nC	di/dt= 100A/µs	
Turn-on Delay Time	t _{d(on)}		2.9	_	ns		
Turn-on Rise Time	tr		6.4	_	ns	$V_{DD} = 10V, V_{GS} = 4.5V$	
Turn-off Delay Time			16.0	_	ns	$I_D = 1A, R_G = 6.0\Omega$	
Turn-off Fall Time	t _{d(off)}		11.2	_	ns	1	

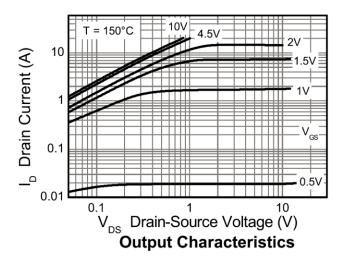
Notes:

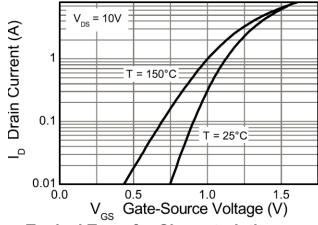
- 8. Measured under pulsed conditions. Width=300µs. Duty cycle ≤ 2%.
 9. Switching characteristics are independent of operating junction temperature.
 10. For design aid only, not subject to production testing.

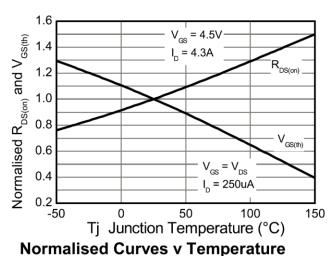


Typical Characteristics

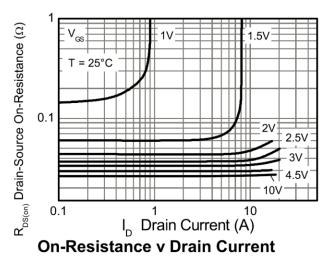


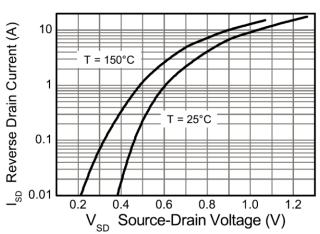








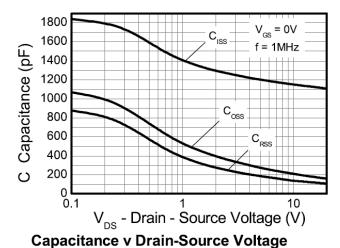


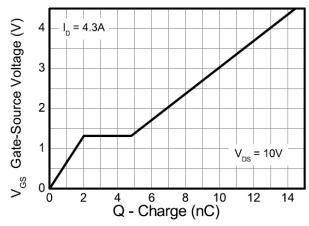


Source-Drain Diode Forward Voltage



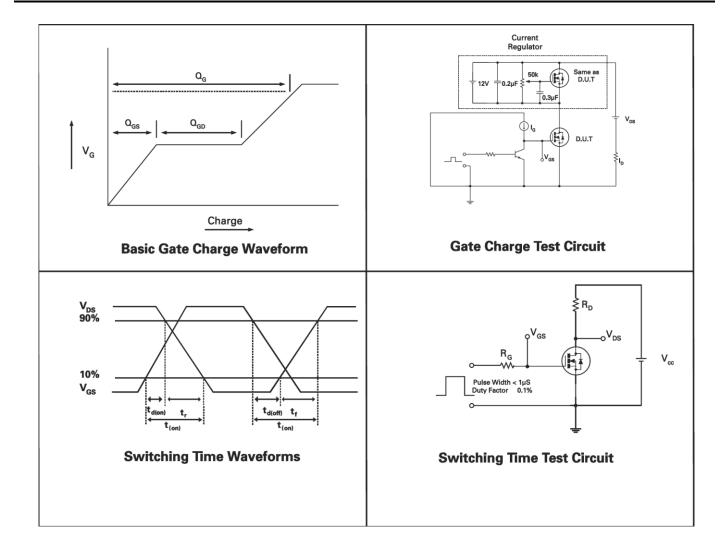
Typical Characteristics (Cont.)





Gate-Source Voltage v Gate Charge

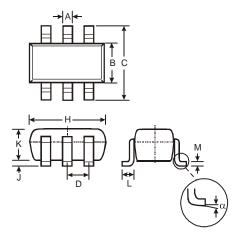
Test Circuits





Package Outline Dimensions

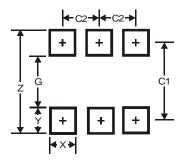
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



SOT26						
Dim	Min	Max	Тур			
Α	0.35	0.50	0.38			
В	1.50	1.70	1.60			
С	2.70	3.00	2.80			
D	_	_	0.95			
Н	2.90	3.10	3.00			
J	0.013	0.10	0.05			
K	1.00	1.30	1.10			
L	0.35	0.55	0.40			
M	0.10	0.20	0.15			
α	0°	8°				
All Dimensions in mm						

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



Dimensions	Value (in mm)
Z	3.20
G	1.60
Х	0.55
Υ	0.80
C1	2.40
C2	0.95



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