MT3008N3

N-Channel Enhancement Mode Field Effect Transistor

MT Semiconductor®

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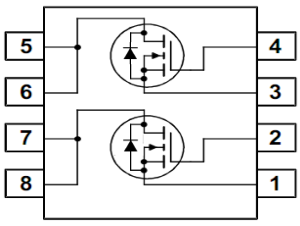
Product Summary

PRODUCT SUMMARY		
V_{DSS}	I_D	$R_{DS(ON)}$
30V	20A	10mΩ @ V_{GS}=10V
		18mΩ @ V_{GS}=4.5V

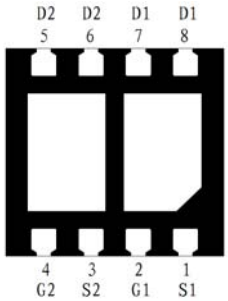
Simplified Schematic



Features

- Supper high dense cell design for low $R_{DS(ON)}$
- Rugged and reliable
- Simple drive requirement
- DFN3*3 Package

MARKING DIAGRAM & PIN ASSIGNMENT



Absolute Maximum Ratings (T_A = 25℃ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous[a] @Tj=125℃	I_D	20	A
Pulsed Drain Current [B]	I_{DM}	100	A
Maximum Power Dissipation[a]	P_D	1.5	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 to 150	℃

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to Ambient[a]	Rth J_A	125	℃/W

ELECTRICAL CHARACTERISTICS (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250 μA	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V,V_{GS} =0V			1	μA
Gate-Body Leakage	I_{GSS}	V_{GS}=±20V,V_{DS}=0V			±100	nA
ON CHARACTERITICS						
Gate Threshold Voltage	V_{GS}(th)	V_{DS}=V_{GS},I_D=250 μA	1	1.5	2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=10V,I_D =10A		10	11	mΩ
		V_{GS}=4.5V,I_D=5A		18	20	
DAYNAMIC CHARACTERISTICS						
Input Capacitance	C_{ISS}	V_{DS}=15V,V_{GS}=0V f=1.0MHz		580		pF
Output Capacitance	C_{OSS}			90		pF
Reverse Transfer Capacitance	C_{RSS}			78		pF
SWITCHING CHARACTERISISTICS						
Turn-On Delay Time	$t_{D(ON)}$	V_{DD}=15V I_D=5.3A, V_{GEN}=4.5V R_L=10ohm R_{GEN}=10ohm		9		ns
Rise Time	tr			10		ns
Turn-Off Delay Time	$t_{D(OFF)}$			38		ns
Fall Time	tf			23		ns
Total Gate Charge	Qg	V_{DS}=15V,I_D=1A V_{GS}=10V		11.2		nC
Gate-Source Charge	Qgs			2.1		nC
Gate-Drain Charge	Qgd			2.9		nC

Notes

a. Surface Mounted on FR4 Board, t≦10sec

b. Pulse Test: Pulse Width≦300Us, Duty Cycle≦2%

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

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

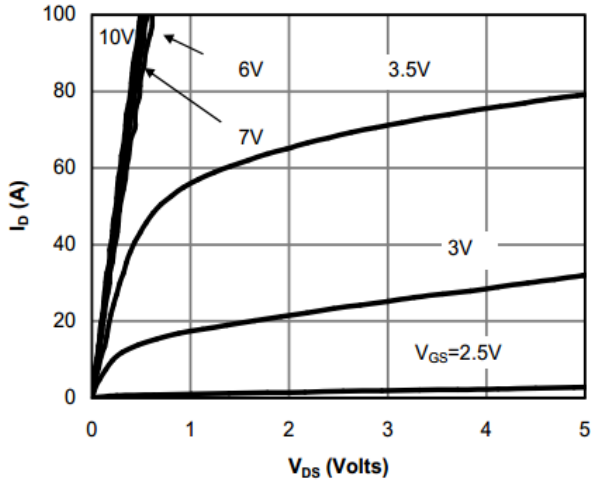


Fig 1: On-Region Characteristics (Note E)

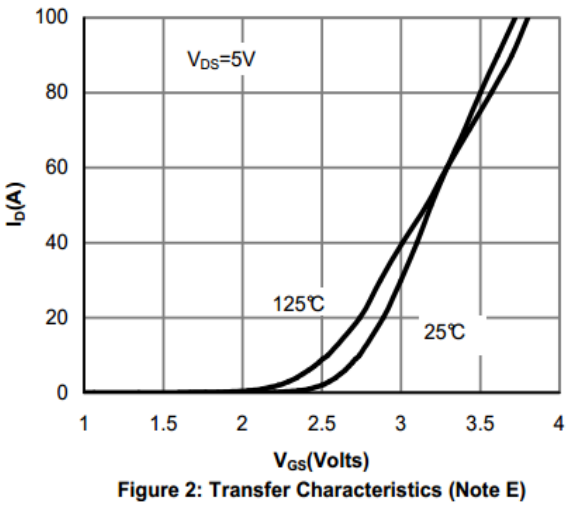


Figure 2: Transfer Characteristics (Note E)

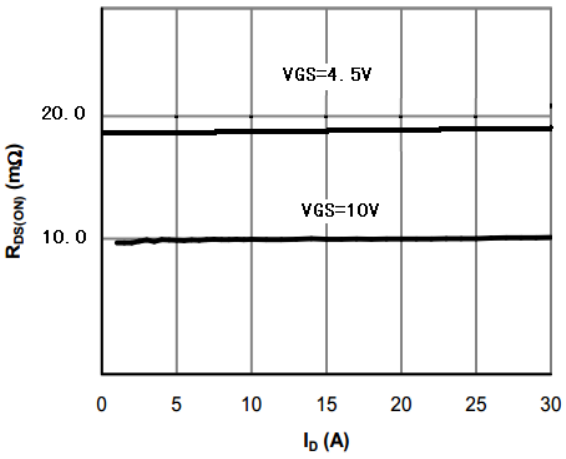


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

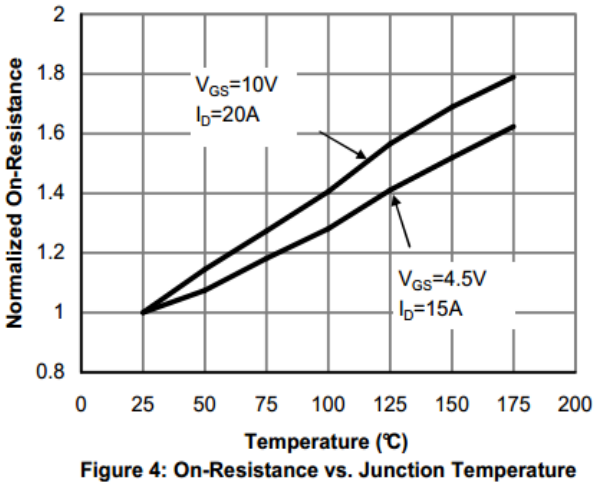


Figure 4: On-Resistance vs. Junction Temperature (Note E)

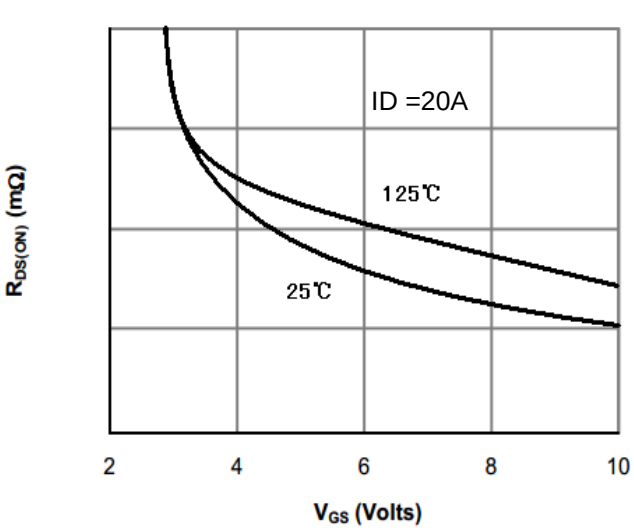


Figure 5: On-Resistance vs. Gate-Source Voltage

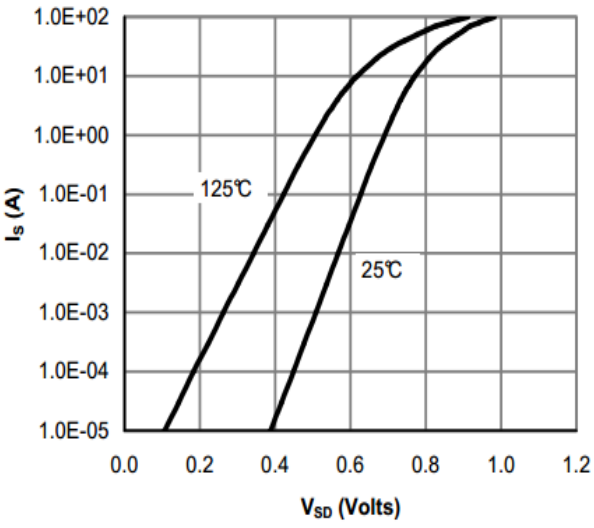


Figure 6: Body-Diode Characteristics (Note E)

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

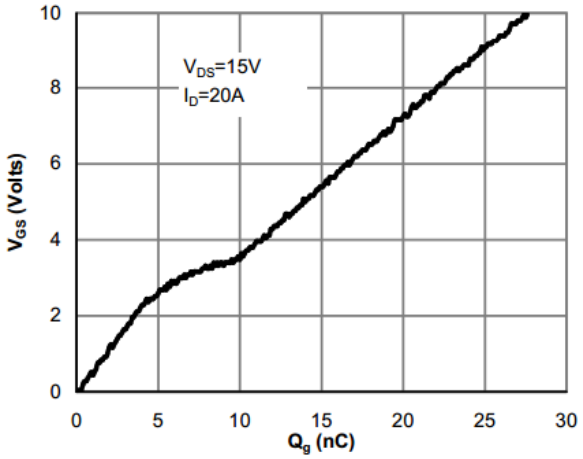


Figure 7: Gate-Charge Characteristics

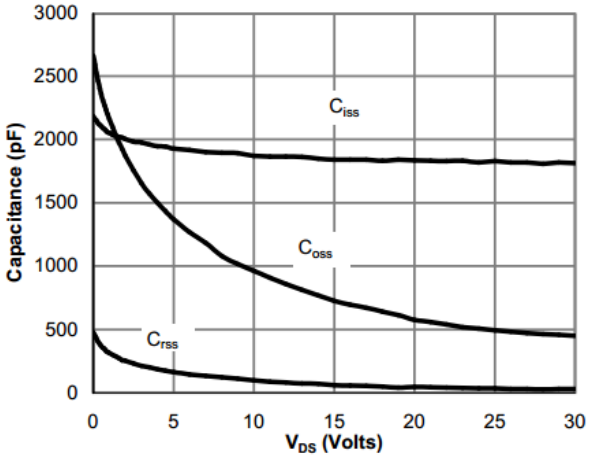


Figure 8: Capacitance Characteristics

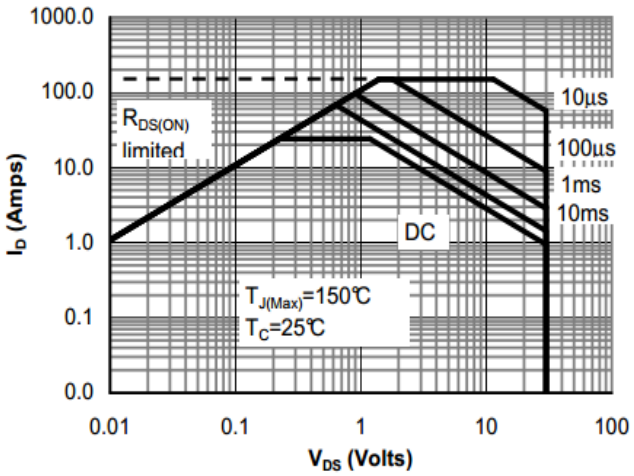


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

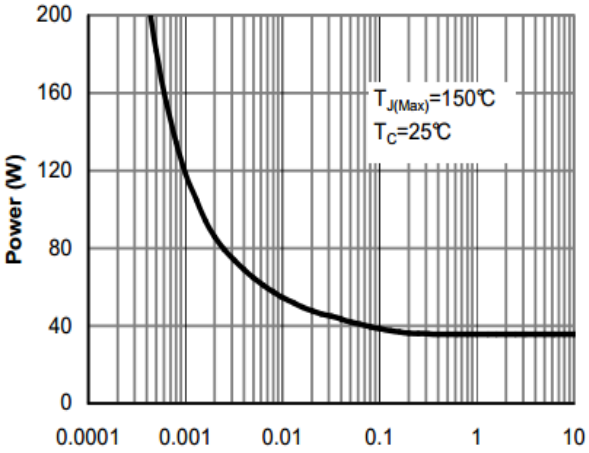


Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)

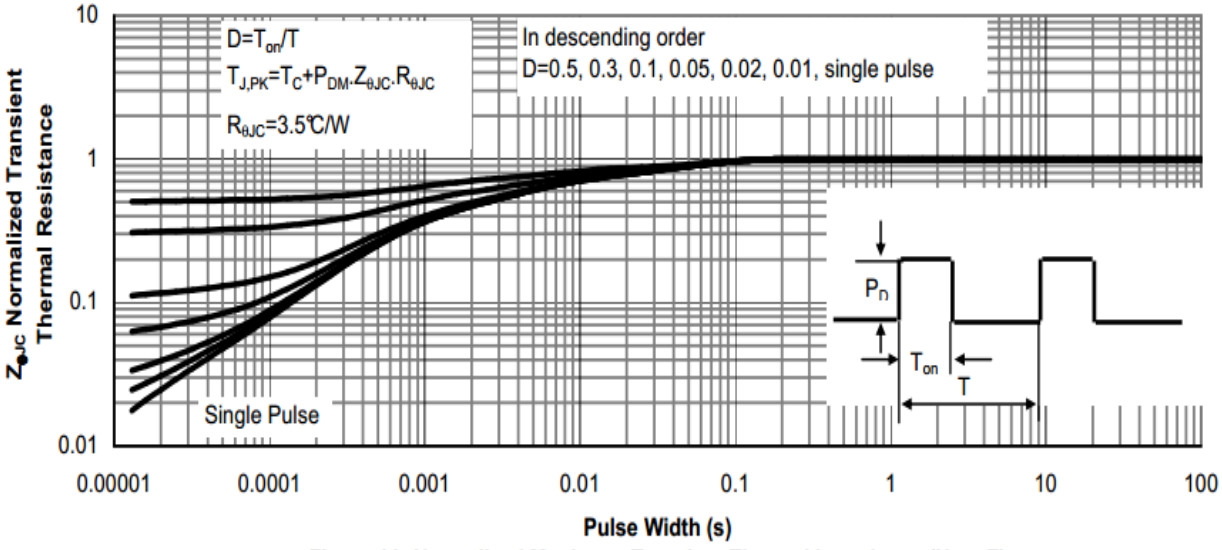
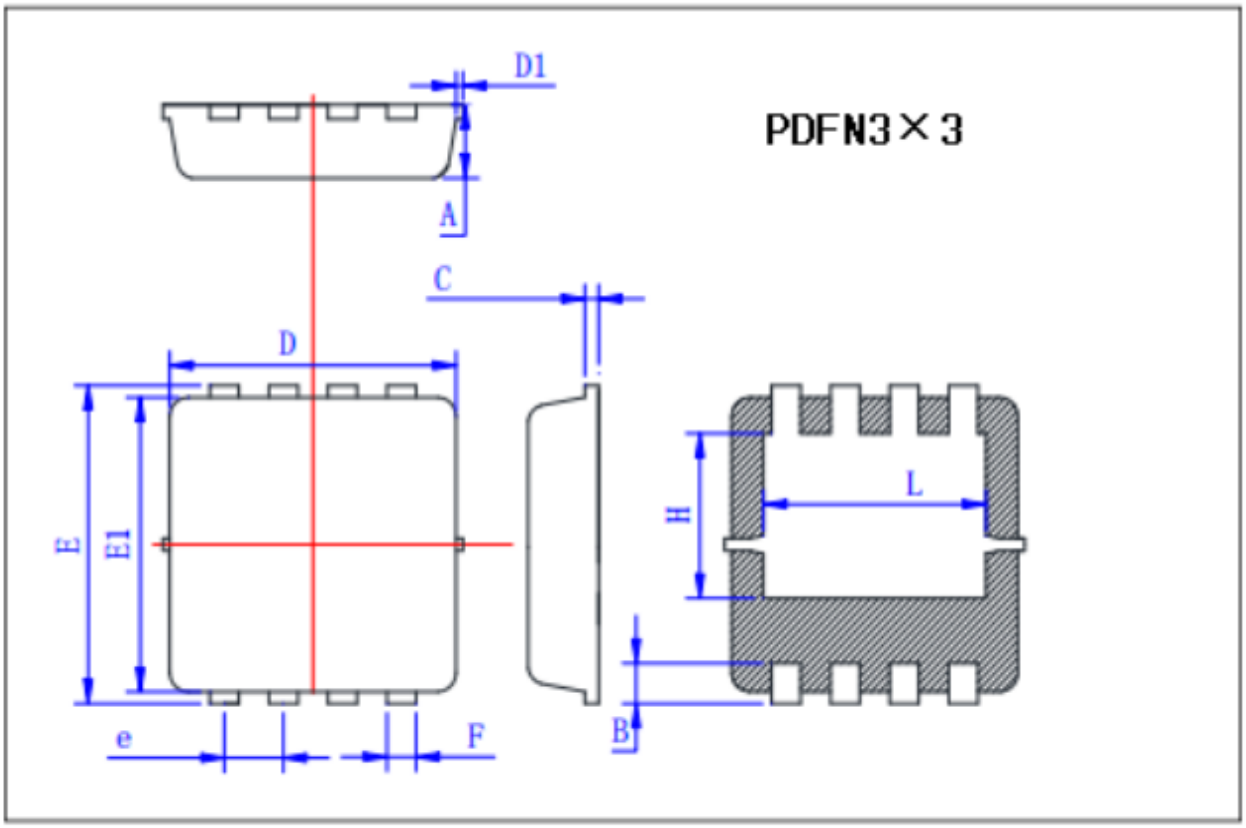


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

PACKAGE OUTLINE DIMENSIONS



Symbol	Min	Typ	Max
A	0.725	0.775	0.825
B	0.28	0.38	0.48
C	0.13	0.15	0.20
D	3.05	3.15	3.25
D1			0.10
E	3.25	3.35	3.45
E1	3.0	3.1	3.2
e	0.60	0.65	0.70
F	0.27	0.32	0.37
H	1.63	1.73	1.83
L	2.35	2.45	2.55

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