N-Channel Enhancement Mode Power MOSFET With ESD Protected

RoHS COMPLIANT

Features

V_{DS} = 20V,

I_D = 100A

$R_{DS(ON)}$ @V_{GS}= 4.5V, typ=0.8mΩ

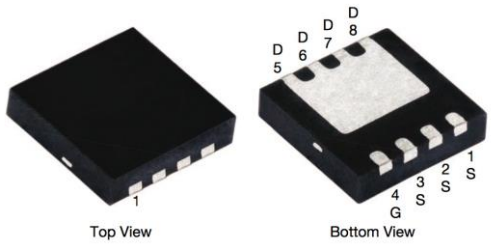
$R_{DS(ON)}$ @V_{GS}= 2.5V, typ=1.0mΩ

ESD Protected

General Description

- DC/DC power supplies
- High current power rails in computing
- Telecom POL and bricks
- Battery protection

Pin Configurations



TDFN3.3*3.3-8L

Absolute Maximum Ratings @T_A=25℃ unless otherwise noted

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	20	V
Gate-Source Voltage		V_{GSS}	±12	V
Drain Current (Continuous) *C	T_C=25°C	I_D	100	A
	T_C=100° C		65	
Drain Current (Pulse) *B		I_{DM}	300	A
Power Dissipation	T_C=25°C	P_D	75	W
Operating Temperature/ Storage Temperature		T_J/T_{STG}	-55~150	℃

Thermal Resistance Ratings

Parameter		Symbol	Maximum	Unit
Thermal Resistance Junction-ambient *A	t ≤ 10 s	$R_{\theta JA}$	38	°C/W
Thermal Resistance Junction-case *A	Steady state	$R_{\theta JC}$	2.9	

- **Electrical Characteristics** @T_A=25℃ unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static*D						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D= 250μA	20	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 16V, V_{GS} = 0V	--	--	1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_{DS}= 250μA	0.4	--	1.0	V
Gate Leakage Current	I_{GSS}	V_{GS}= ±10V, V_{DS}=0V	--	--	±10	μA
Drain-Source On-state Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 20A	--	0.8	1.0	mΩ
	$R_{DS(on)}$	V_{GS} = 4.5V, I_D = 20A	--	1.0	1.2	mΩ
	$R_{DS(on)}$	V_{GS} = 2.5V, I_D = 20A	--	1.2	1.8	mΩ
Diode Forward Voltage	V_{SD}	I_{SD}= 1A , V_{GS}=0V	--	0.7	1.2	V
Diode Forward Current *C	I_S	T_C =25°C	--	--	100	A
Switching						
Total Gate Charge	Q_g	V_{DS}=10V,I_D=20A, V_{GS}=10V	--	85	--	nC
Gate-Source Charge	Q_{gs}		--	9.5	--	nC
Gate-Drain Charge	Q_{gd}		--	13	--	nC
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=10V ,R_L=1Ω, V_{GEN}=10V, I_D=10A, R_g=1Ω	--	11	--	ns
Turn-on Rise Time	t_r		--	16	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	54	--	ns
Turn-Off Fall Time	t_f		--	17	--	ns
Dynamic						
Input Capacitance	C_{iss}	V_{DS}=10V,V_{GS}=0V, f=1.0MHz	--	5238	--	pF
Output Capacitance	C_{oss}		--	490	--	pF
Reverse Transfer Capacitance	C_{rss}		--	296	--	pF

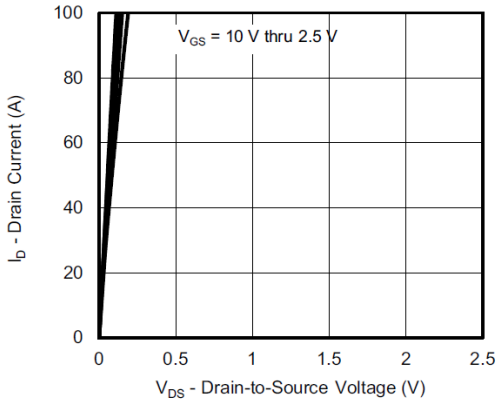
A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

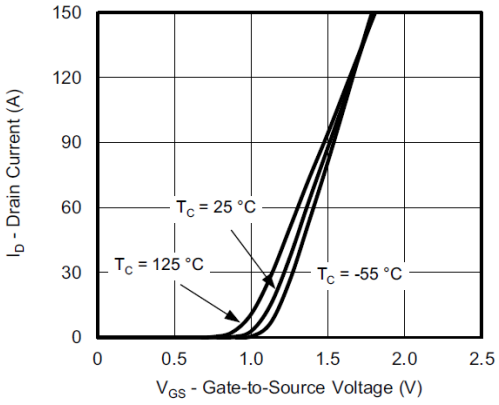
C: The current rating is based on the t≤ 10s junction to ambient thermal resistance rating, Package Limited 100A.

D: Pulse Test：Pulse Wide≤ 300μs，Duty Cycle≤ 2%.

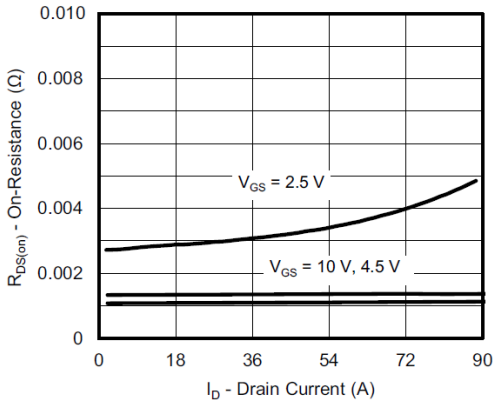
Typical Performance Characteristics（(TJ = 25 °C, unless otherwise noted)）



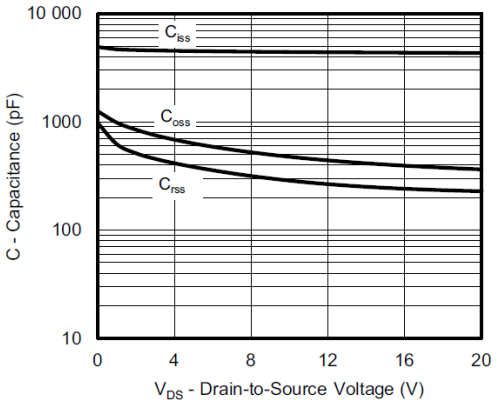
Output Characteristics



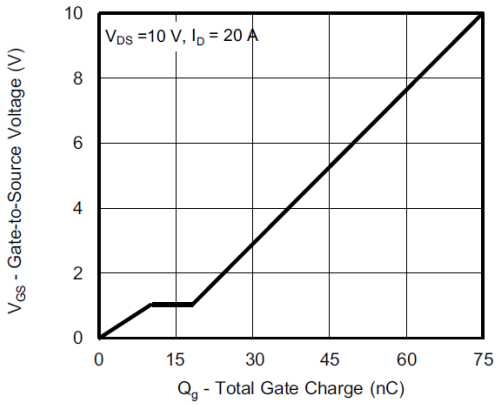
Transfer Characteristics



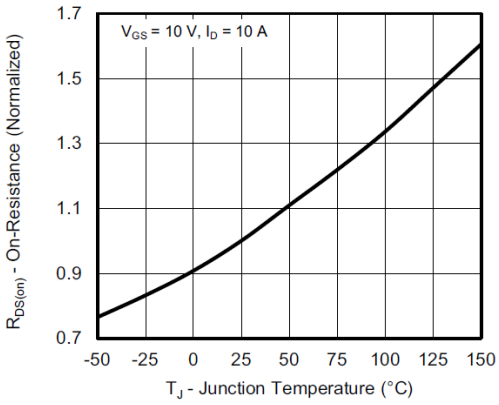
On-Resistance vs. Drain Current and Gate Voltage



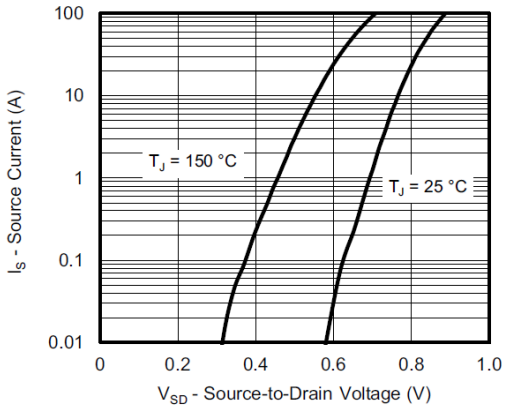
Capacitance



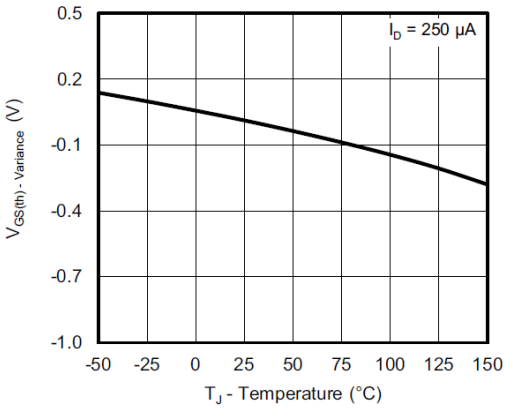
Gate Charge



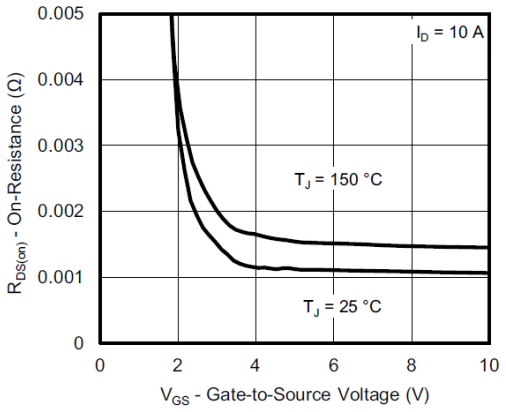
On-Resistance vs. Junction Temperature



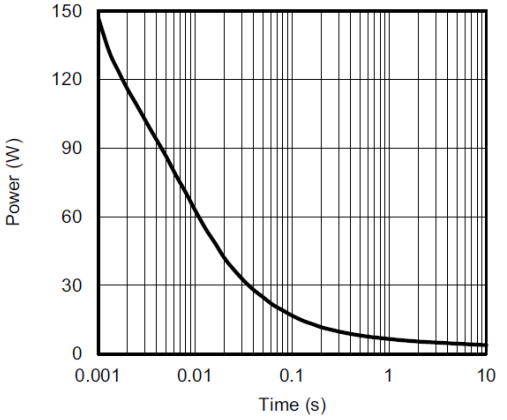
Source-Drain Diode Forward Voltage



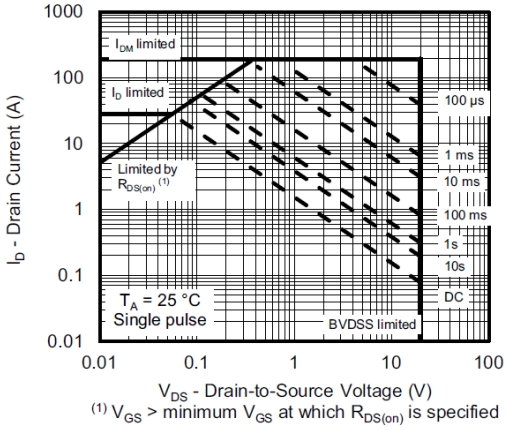
Threshold Voltage



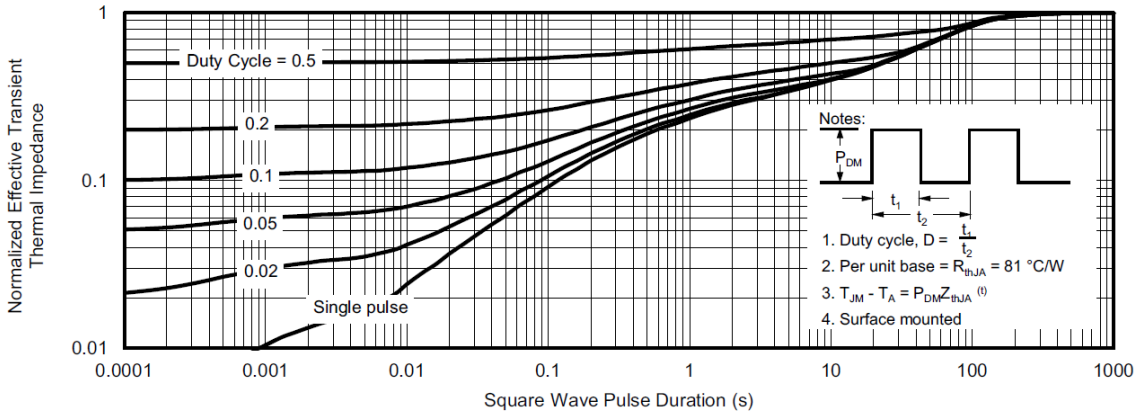
On-Resistance vs. Gate-to-Source Voltage



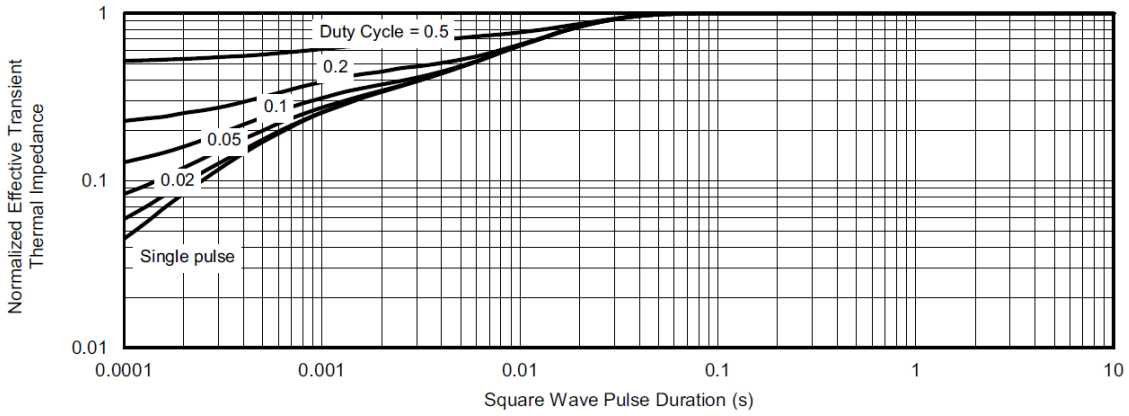
Single Pulse Power, Junction-to-Ambient



Safe Operating Area, Junction-to-Ambient



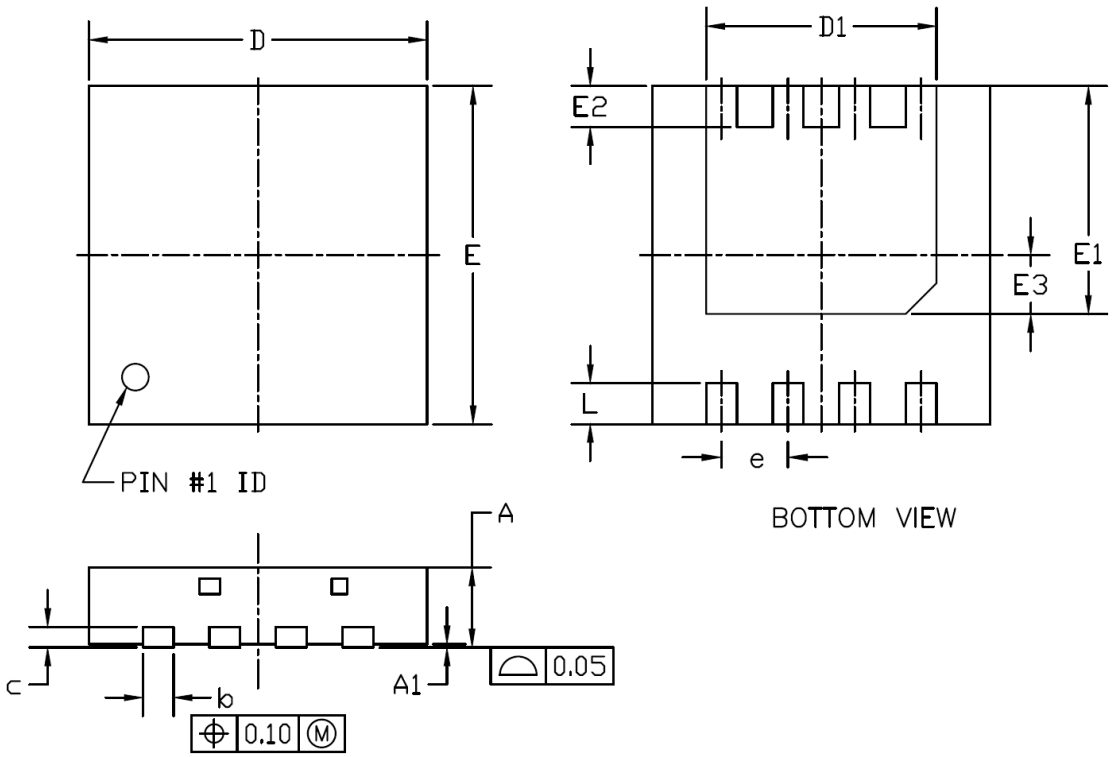
Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

- **Package Information**

TDFN3.3*3.3-8L



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.75	0.80	0.028	0.030	0.031
A1	--	--	0.05	--	--	0.002
b	0.24	0.30	0.35	0.009	0.012	0.014
c	0.10	0.15	0.25	0.004	0.006	0.010
D	3.20	3.30	3.40	0.126	0.130	0.134
D1	2.15	2.25	2.35	0.085	0.089	0.093
E	3.20	3.30	3.40	0.126	0.130	0.134
E1	2.13	2.23	2.33	0.084	0.088	0.092
E2	0.30	0.40	0.50	0.012	0.016	0.020
E3	0.48	0.58	0.68	0.019	0.023	0.027
e	0.65 BSC			0.026 BSC		
L	0.30	0.40	0.50	0.012	0.016	0.020

NOTE
1. CONTROLLING DIMENSION IS MILLIMETER.
CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.