

N-Channel Enhancement Mode Power MOSFET

● Features

$$V_{DS} = 60V,$$

$$I_D = 67A$$

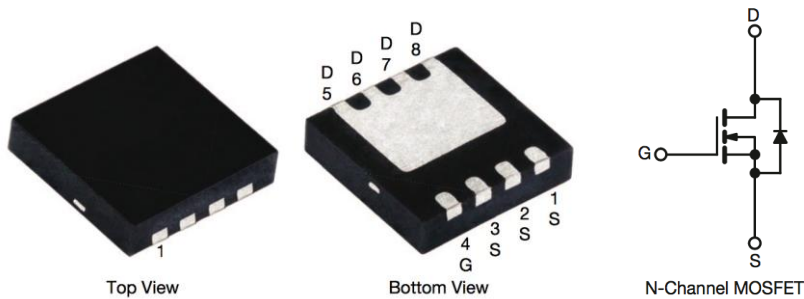
$$R_{DS(ON)} @ V_{GS} = 10V, \text{ TYP } 4.4 \text{ m}\Omega$$

$$R_{DS(ON)} @ V_{GS} = 4.5V, \text{ TYP } 6.3 \text{ m}\Omega$$

● General Description

- DC/DC power supplies
- Synchronous rectification
- Battery and load switch

● Pin Configurations



TDFN3*3-8L

● Absolute Maximum Ratings @ $T_A=25^\circ\text{C}$ unless otherwise noted

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DSS}	60	V
Gate-Source Voltage	V_{GSS}	± 20	V
Drain Current (Continuous) *AC	I_D	$T_C=25^\circ\text{C}$	67
		$T_C=70^\circ\text{C}$	54
Drain Current (Pulse) *B	I_{DM}	268	A
Power Dissipation	P_D	52	W
Operating Temperature/ Storage Temperature	T_J/T_{STG}	-55~150	$^\circ\text{C}$

● Thermal Resistance Ratings

Parameter	Symbol	Maximum	Unit
Maximum Junction-to-Ambient	R_{thJA}	33	$^\circ\text{C/W}$
Maximum Junction-to-Case (Drain)	R_{thJC}	2.4	

● Electrical Characteristics @ $T_A=25^{\circ}\text{C}$ unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static *D						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0V$	--	--	1	μA
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_{DS} = 250\mu A$	1	--	3	V
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	--	--	± 100	nA
Drain-Source On-state Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$	--	4.4	5.8	m Ω
	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 10A$	--	6.3	8.2	m Ω
Diode Forward Voltage	V_{SD}	$I_{SD} = 1A, V_{GS} = 0V$	--	--	1.2	V
Diode Forward Current *AC	I_S	$T_C = 25^{\circ}\text{C}$	--	--	43	A
Switching						
Total Gate Charge	Q_g	$V_{GS}=10V, V_{DS}=30V, I_D=20A$	--	39	--	nC
Gate-Source Charge	Q_{GS}		--	13	--	nC
Gate-Drain Charge	Q_{gd}		--	9.2	--	nC
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=30V,$ $R_L=1.5\Omega, R_g=4.5\Omega$ $I_D=20A$	--	16	--	ns
Turn-on Rise Time	t_r		--	47	--	ns
Turn-off Delay Time	$t_{d(off)}$		--	29	--	ns
Turn-Off Fall Time	t_f		--	46	--	ns
Dynamic						
Input Capacitance	C_{iss}	$V_{DS}=30V, V_{GS}=0V, f=1.0\text{MHz}$	--	2281	--	pF
Output Capacitance	C_{oss}		--	797	--	pF
Reverse Transfer Capacitance	C_{rss}		--	35	--	pF

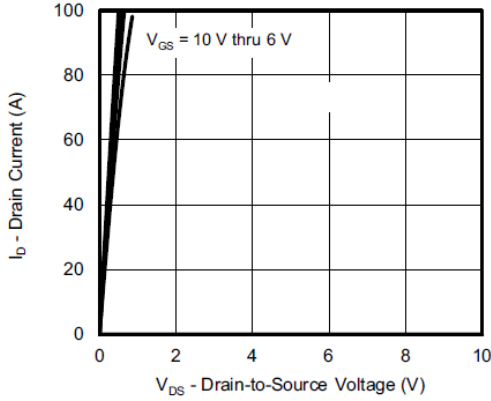
A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^{\circ}\text{C}$. The value in any given application depends on the user's specific board design.

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

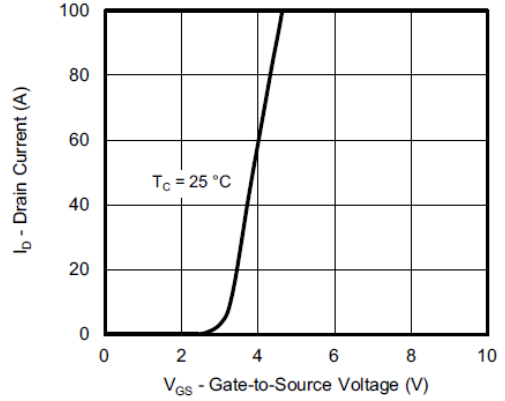
C: The current rating is based on the $t_s \leq 10\text{s}$ junction to ambient thermal resistance rating, package limited 50A.

D: Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycles $\leq 2\%$.

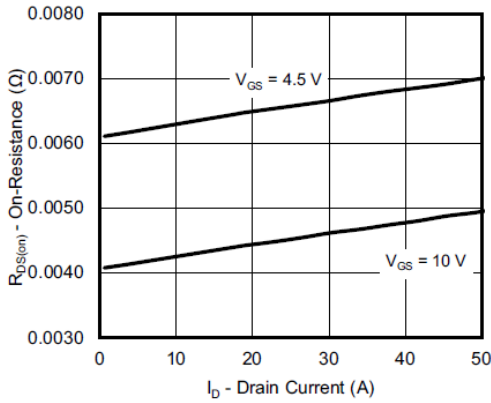
● Typical Performance Characteristics (T_J = 25 °C, unless otherwise noted)



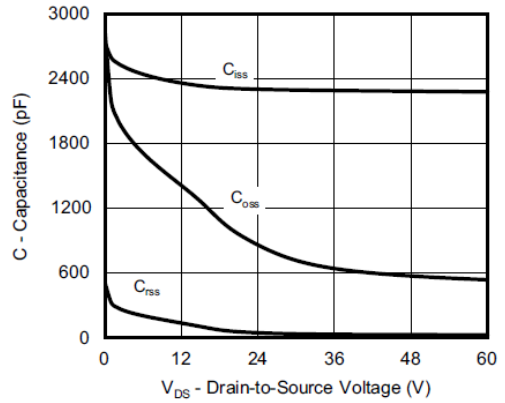
Output Characteristics



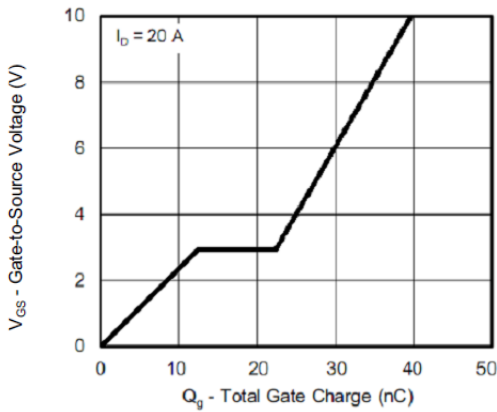
Transfer Characteristics



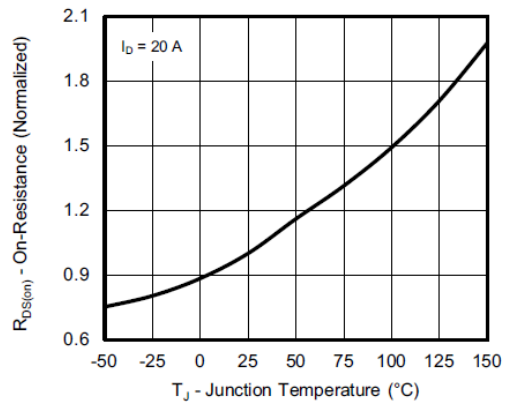
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

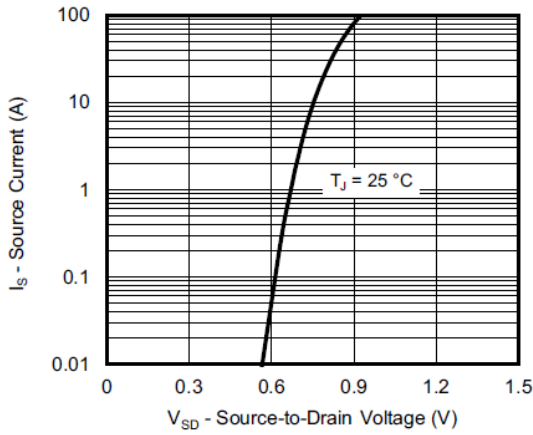


Gate Charge

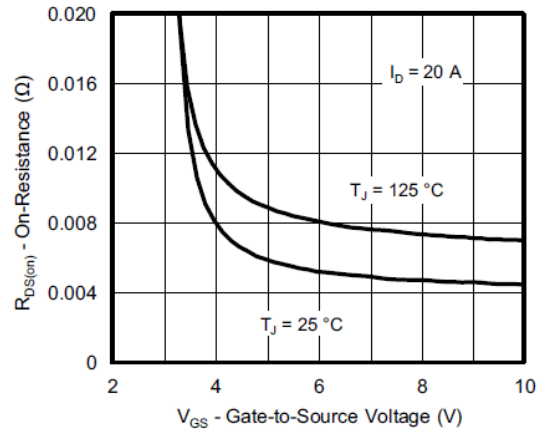


On-Resistance vs. Junction Temperature

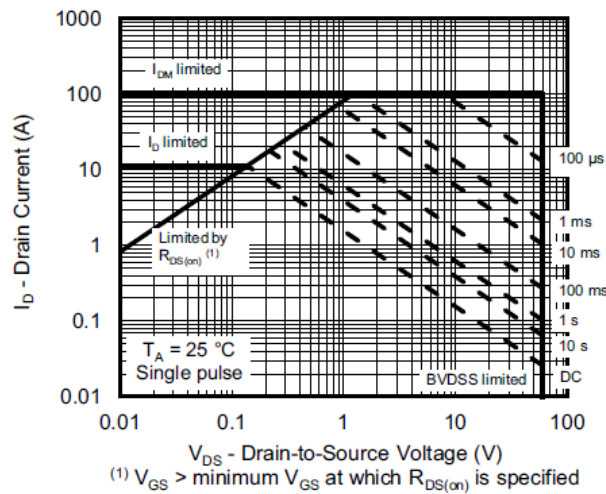
N-Channel Enhancement Mode Power MOSFET



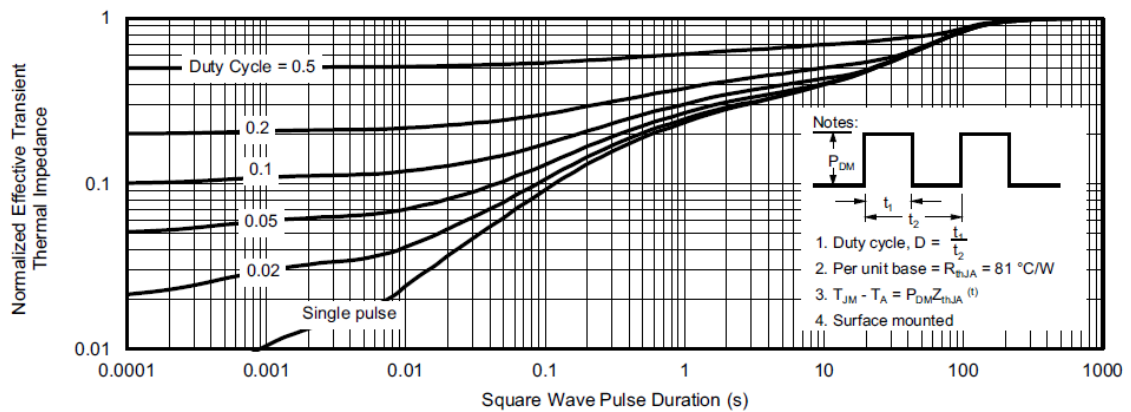
Source-Drain Diode Forward Voltage



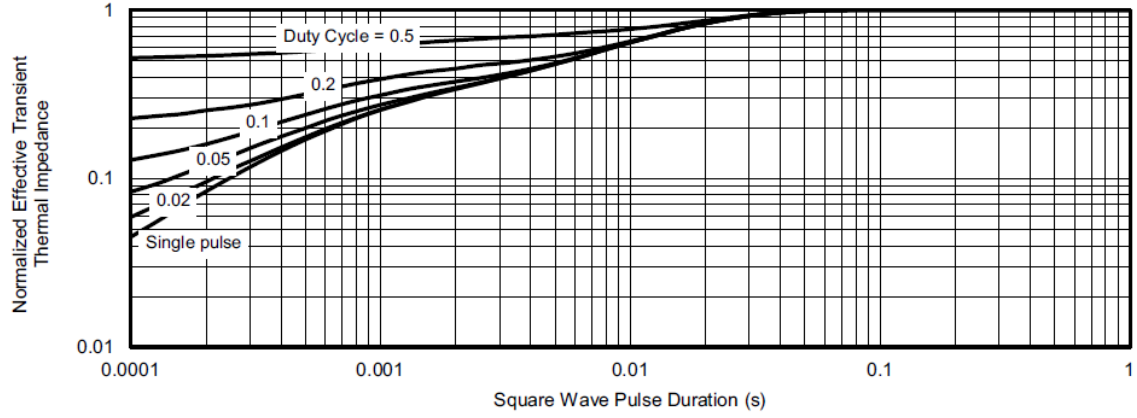
On-Resistance vs. Gate-to-Source Voltage



Safe Operating Area, Junction-to-Ambient



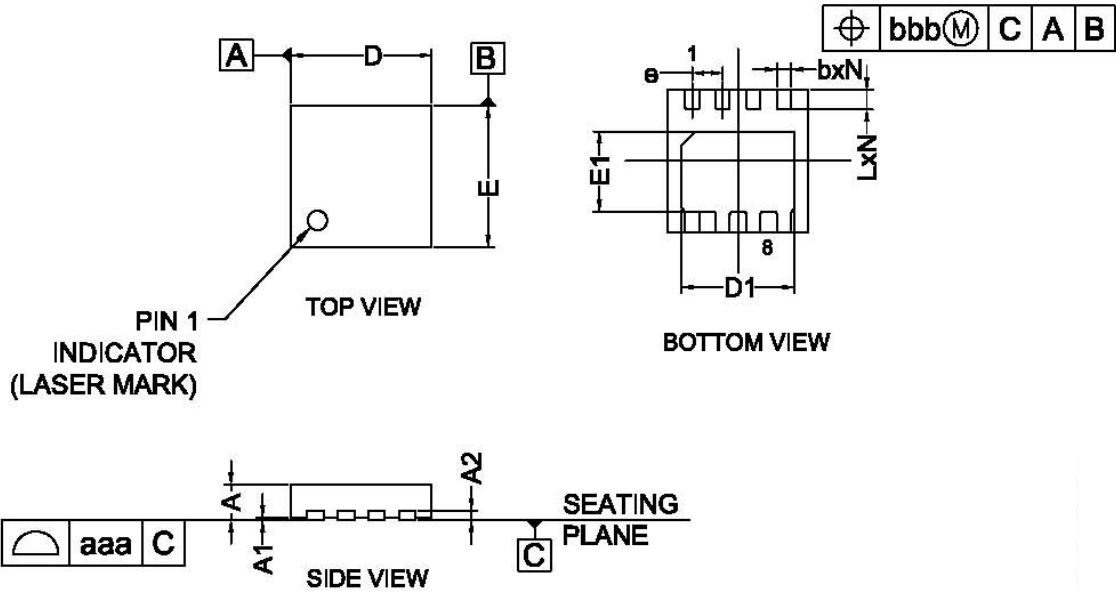
Normalized Thermal Transient Impedance, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Case

● Package Information

TDFN3*3-8L



COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	TYP	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2	0.203		
b	0.25	0.30	0.35
D	2.90	3.00	3.10
D1	2.35	2.40	2.45
E	2.90	3.00	3.10
E1	1.85	1.70	1.75
e	0.65BSC		
L	0.37	0.42	0.47
N	8		
aaa	0.08		
bbb	0.10		

Flow (wave) soldering (solder dipping)

Product	Peak Temperature	Dipping Time
Pb device	245°C ±5°C	5sec ±1 sec
Pb-Free device	260°C +0/-5°C	5sec ±1 sec



This integrated circuit can be damaged by ESD. UniverChip Corporation recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedure can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

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