FDD8444-F085P Datasheet

https://www.DiGi-Electronics.com

DiGi Electronics Part Number	FDD8444-F085P-DG
Manufacturer	onsemi
Manufacturer Product Number	FDD8444-F085P
Description	MOSFET N-CH 40V 50A TO252
Detailed Description	N-Channel 40 V 50A (Ta) 153W (Ta) Surface Mount TO-252AA

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
FDD8444-F085P	onsemi
Series:	Product Status:
PowerTrench®	Obsolete
FET Type:	Technology:
N-Channel	MOSFET (Metal Oxide)
Drain to Source Voltage (Vdss):	Current - Continuous Drain (Id) @ 25°C:
40 V	50A (Ta)
Drive Voltage (Max Rds On, Min Rds On):	Rds On (Max) @ Id, Vgs:
10V	5.2mOhm @ 50A, 10V
Vgs(th) (Max) @ Id:	Gate Charge (Qg) (Max) @ Vgs:
4V @ 250µA	116 nC @ 10 V
Vgs (Max):	Input Capacitance (Ciss) (Max) @ Vds:
±20V	6195 pF @ 25 V
FET Feature:	Power Dissipation (Max):
-	153W (Ta)
Operating Temperature:	Grade:
-55°C ~ 175°C (TJ)	Automotive
Qualification:	Mounting Type:
AEC-Q101	Surface Mount
Supplier Device Package:	Package / Case:
TO-252AA	TO-252-3, DPAK (2 Leads + Tab), SC-63
Base Product Number:	
FDD844	

Environmental & Export classification

Moisture Sensitivity Level (MSL):	REACH Status:
Not Applicable	REACH Unaffected
ECCN:	HTSUS:
EAR99	8541.29.0095

ON Semiconductor

Is Now

To learn more about onsemi™, please visit our website at
www.onsemi.com

ON Semiconductor®

FDD4685-F085

P-Channel PowerTrench® MOSFET

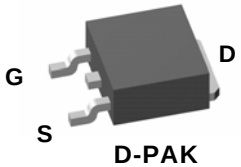
-40 V, -32 A, 35 mΩ

Features

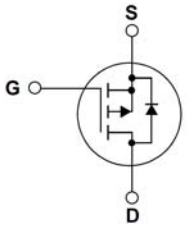
- Typical $R_{DS(on)}$ = 23 mΩ at V_{GS} = -10V, I_D = -8.4 A
- Typical $R_{DS(on)}$ = 30 mΩ at V_{GS} = -4.5V, I_D = -7 A
- Typical $Q_{g(tot)}$ = 19 nC at V_{GS} = -5V, I_D = -8.4 A
- UIS Capability
- RoHS Compliant
- Qualified to AEC Q101

Applications

- Inverter
- Power Supplies



D-PAK
(TO-252)



MOSFET Maximum Ratings T_J = 25°C unless otherwise noted.

Symbol	Parameter		Ratings	Units
V_{DSS}	Drain-to-Source Voltage		-40	V
V_{GS}	Gate-to-Source Voltage		±20	V
I_D	Drain Current - Continuous (T_C < 90°C, V_{GS}=10)	(Note 1)	-32	A
	Pulsed Drain Current		See Figure 4	
E_{AS}	Single Pulse Avalanche Energy	(Note 2)	121	mJ
P_D	Power Dissipation		83	W
	Derate Above 25°C		0.56	W/°C
T_J, T_{STG}	Operating and Storage Temperature		-55 to + 175	°C
$R_{\theta JC}$	Thermal Resistance, Junction to Case		1.8	°C/W
$R_{\theta JA}$	Maximum Thermal Resistance, Junction to Ambient	(Note 3)	40	°C/W

Package Marking and Ordering Information

Device Marking	Device	Package	Reel Size	Tape Width	Quantity
FDD4685	FDD4685-F085	D-PAK(TO-252)	13”	12mm	2500units

Notes:
1. Current is limited by bondwire configuration.
2. Starting T_J = 25°C, L = 3mH, I_{AS} = 9A, V_{DD} = 40V during inductor charging and V_{DD} = 0V during time in avalanche.
3. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design, while $R_{\theta JA}$ is determined by the board design. The maximum rating presented here is based on mounting on a 1 in^2 pad of 2oz copper.
4. A suffix as “…F085P” has been temporarily introduced in order to manage a double source strategy as ON Semiconductor has officially announced in Aug 2014.

September-2017,Rev.2

Publication Order Number:
FDD4685-F085/D

Electrical Characteristics T_J = 25°C unless otherwise noted.

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
B_{VDSS}	Drain-to-Source Breakdown Voltage	I_D = -250μA, V_{GS} = 0V	-40	-	-	V
$\frac{\Delta B_{VDSS}}{\Delta T_J}$	Breakdown Voltage Temperature Coefficient	ID = -250μA, referenced to 25°C	-	-33	-	mV/°C
I_{DSS}	Drain-to-Source Leakage Current	V_{DS} = -32V	-	-	-1	μA
I_{GSS}	Gate-to-Source Leakage Current	V_{GS} = ±20V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate to Source Threshold Voltage	V_{GS} = V_{DS}, I_D = -250μA	-1	-1.6	-3	V
$\frac{\Delta V_{GS(th)}}{\Delta T_J}$	Gate to Source Threshold Voltage Temperature Coefficient	ID = –250μA, referenced to 25°C	-	4.9	-	mV/°C
$R_{DS(on)}$	Drain to Source On Resistance	I_D = -8.4A, V_{GS}= -10V	-	23	27	mΩ
		I_D = -7A, V_{GS}= -4.5V	-	30	35	
		I_D = -8.4A, V_{GS}= -10V, T_J = 150°C	-	38	45	
g_{FS}	Forward Transconductance	ID = –8.4A, VDS = –5V	-	23	-	s
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = -20V, V_{GS} = 0V, f = 1MHz	-	1790	2380	pF
C_{oss}	Output Capacitance		-	260	345	pF
C_{rss}	Reverse Transfer Capacitance		-	140	205	pF
R_g	Gate Resistance	f = 1MHz	-	4	-	Ω
$Q_{g(ToT)}$	Total Gate Charge	V_{DD} = -20V, V_{GS} = -5V, I_D = -8.4A	-	19	27	nC
Q_{gs}	Gate-to-Source Gate Charge		-	5.6	-	nC
Q_{gd}	Gate-to-Drain “Miller“ Charge		-	6.1	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay	V_{DD} = -20V, I_D = -8.4A, V_{GS} = -10V, R_{GEN} = 6Ω	-	8	16	ns
t_r	Rise Time		-	15	27	ns
$t_{d(off)}$	Turn-Off Delay		-	34	55	ns
t_f	Fall Time		-	14	26	ns
Drain-Source Diode Characteristics						
V_{SD}	Source-to-Drain Diode Voltage	I_{SD} = -8.4A, V_{GS} = 0V	-	-0.85	-1.2	V
t_{rr}	Reverse-Recovery Time	I_{SD} = -8.4A, dI_{SD}/dt = 100A/μs	-	30	45	ns
Q_{rr}	Reverse-Recovery Charge		-	31	47	nC

Typical Characteristics

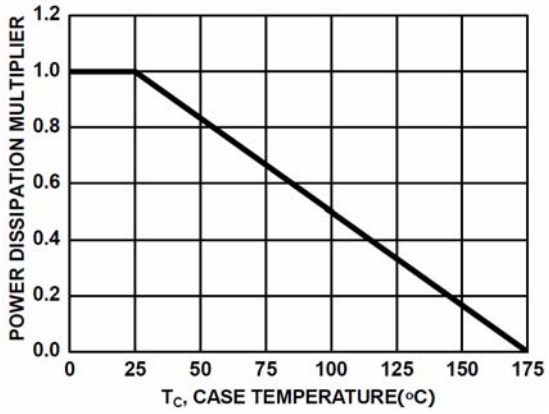


Figure 1. Normalized Power Dissipation vs. Case Temperature

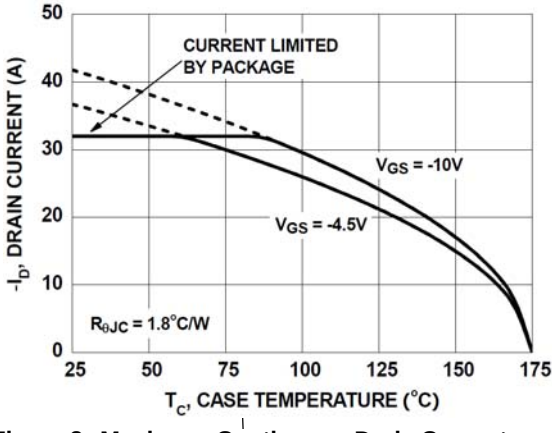


Figure 2. Maximum Continuous Drain Current vs. Case Temperature

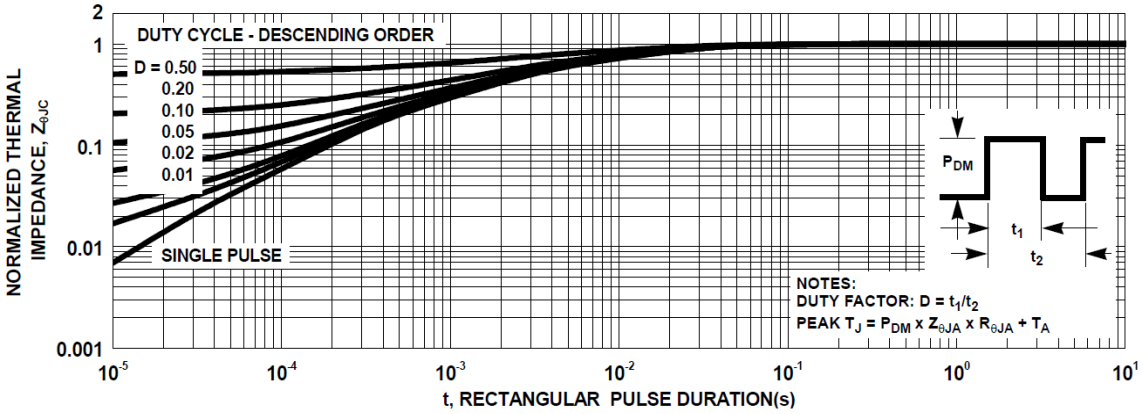


Figure 3. Normalized Maximum Transient Thermal Impedance

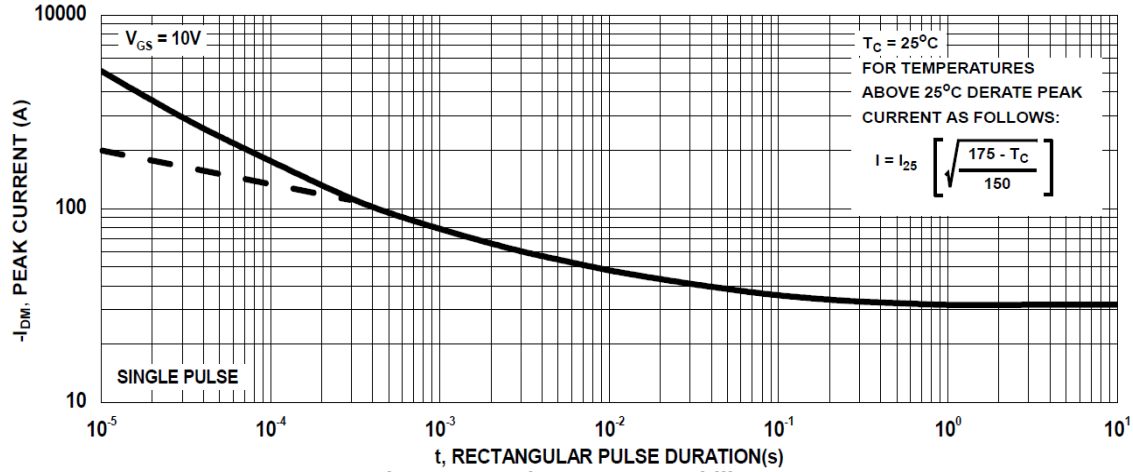


Figure 4. Peak Current Capability

Typical Characteristics

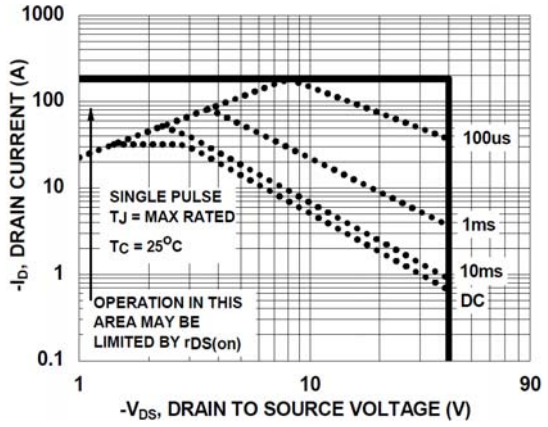
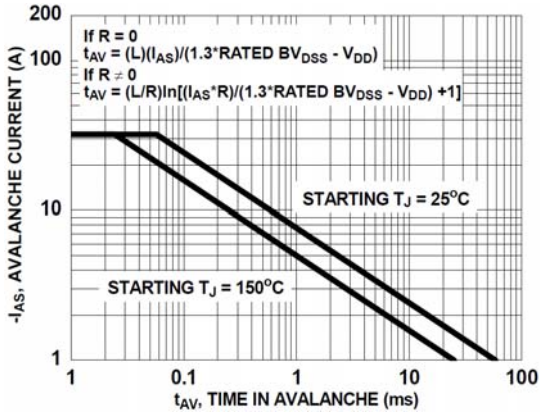


Figure 5. Forward Bias Safe Operating Area



NOTE: Refer to ON SemiconductorApplication Notes AN7514 and AN7515

Figure 6. Unclamped Inductive Switching Capability

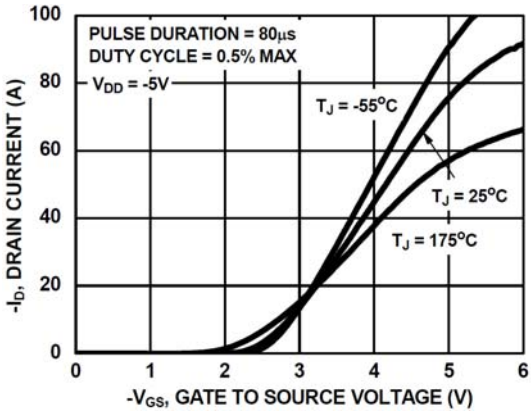


Figure 7. Transfer Characteristics

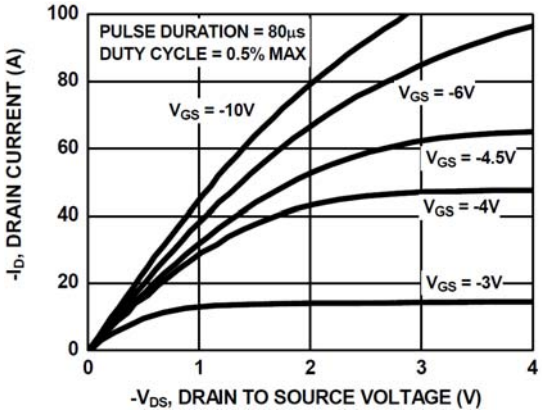


Figure 8. Saturation Characteristics

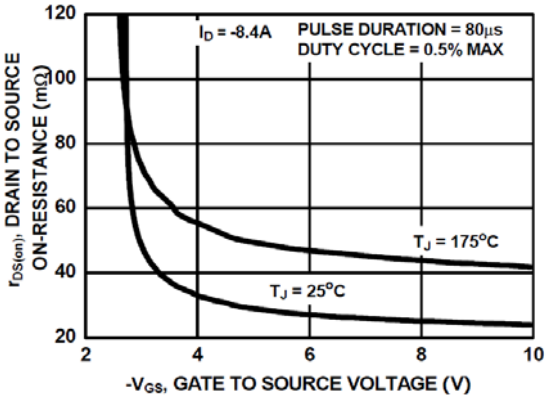


Figure 9. Drain to Source On-Resistance Variation vs. Gate to Source Voltage

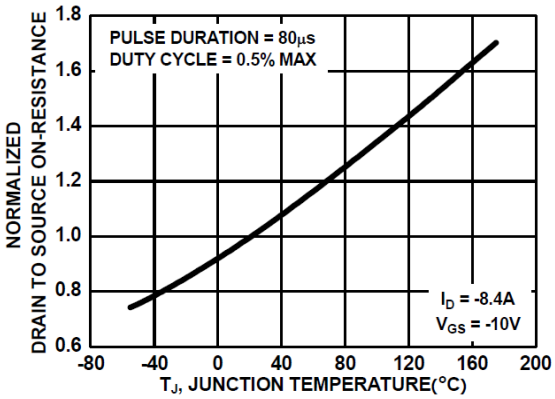


Figure 10. Normalized Drain to Source On Resistance vs. Junction Temperature

Typical Characteristics

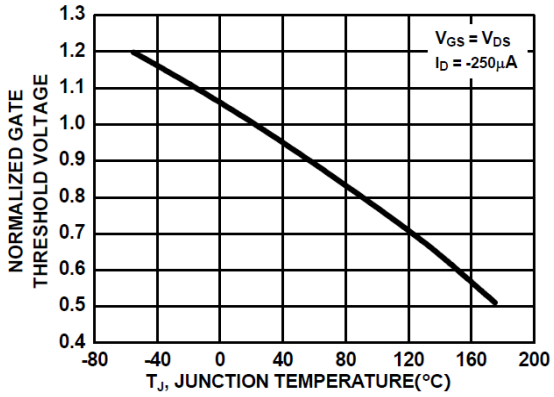


Figure 11. Normalized Gate Threshold Voltage vs. Junction Temperature

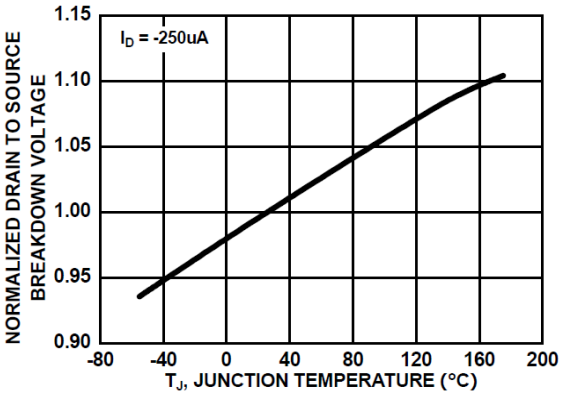


Figure 12. Normalized Drain to Source Breakdown Voltage vs. Junction Temperature

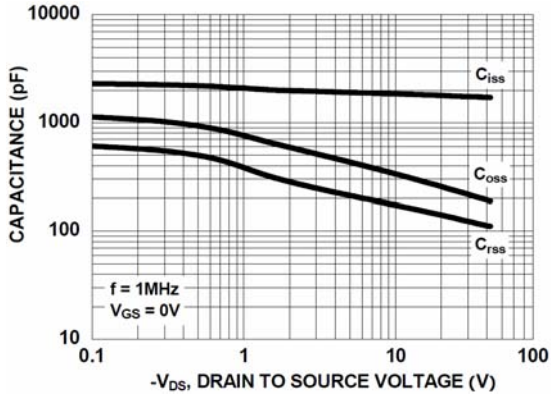


Figure 13. Capacitance vs. Drain to Source Voltage

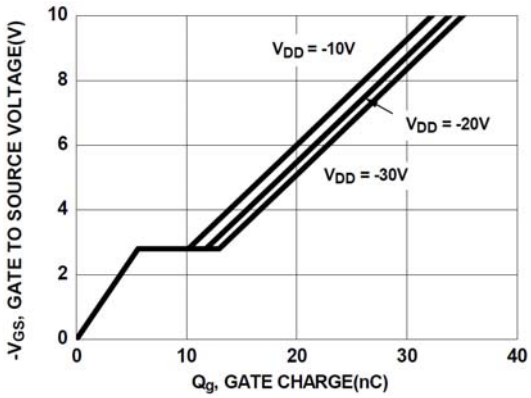


Figure 14. Gate charge vs. Gate to Source Voltage

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
19521 E. 32nd Pkwy, Aurora, Colorado 80011 USA
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
Fax: 303−675−2176 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81−3−5817−1050

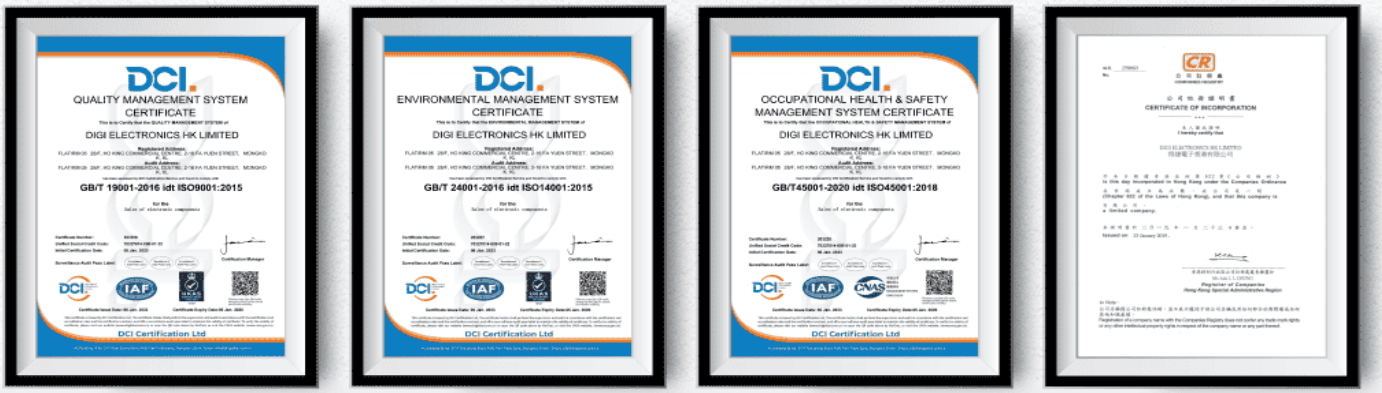
ON Semiconductor Website: **www.onsemi.com**

Order Literature: http://www.onsemi.com/orderlit

For additional information, please contact your local Sales Representative

OUR CERTIFICATE

DiGi provide top-quality products and perfect service for customer worldwide through standardization, technological innovation and continuous improvement. DiGi through third-party certification, we striciy control the quality of products and services. Welcome your RFQ to Email: Info@DiGi-Electronics.com



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.