CMD840/CMU840

500V N-Channel MOSFET

General Description

The 840 ueses advanced Manufacturing of high pressure MOSFET process， can provide excellent RDS(ON). These devices are well suited for high efficiency switched mode power supplies, active power factor correction based on half bridge topology.

Product Summary

BVDSS	RDSON	ID
500V	1.2Ω	8A

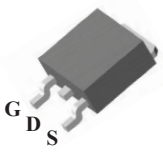
Applications

- Adapter
- Switched Mode Power Supplies (SMPS)
- Uninterruptible Power Supply (UPS)

Features

- Fast switching
- 100% avalanche tested
- Improved dv/dt capability

TO252 / TO251 Pin Configuration



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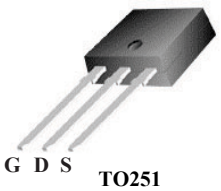

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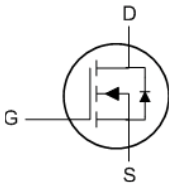

Absolute Maximum Ratings

T_C = 25℃ unless otherwise noted

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source Voltage	500	V
I_D	Drain Current - Continuous (T_C = 25℃)	8	A
	- Continuous (T_C = 100℃)	5	A
I_{DM}	Drain Current - Pulsed [a]	32	A
V_{GSS}	Gate-Source Voltage	± 30	V
E_{AS}	Single Pulsed Avalanche Energy [b]	280	mJ
dv/dt	Peak Diode Recovery dv/dt [c]	4.5	V/ns
P_D	Power Dissipation (T_C = 25℃)	100	W
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	℃
T_L	Maximum lead temperature for soldering purposes, 1/8 from case for 5 seconds	300	℃

Thermal Characteristics

Symbol	Parameter	Value	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case Max.	0.9	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient Max.	62.5	℃/W

Electrical Characteristic

T_C = 25℃ unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = 250 μA	500	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 500 V, V_{GS} = 0 V	--	--	1	μA
		V_{DS} = 400 V, T_C = 125℃	--	--	10	
I_{GSSF}	Gate-Body Leakage Current, Forward	V_{GS} = 30 V, V_{DS} = 0 V	--	--	100	nA
I_{GSSR}	Gate-Body Leakage Current, Reverse	V_{GS} = -30 V, V_{DS} = 0 V	--	--	-100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250 μA	2.0	--	4.0	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	V_{GS} = 10 V, I_D = 3.25A	--	--	1.2	Ω
g_{FS}	Forward Transconductance	V_{DS} = 10 V, I_D = 5A	--	10	--	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 25 V V_{GS} = 0 V f = 1.0 MHz	--	1400	--	pF
C_{oss}	Output Capacitance		--	210	--	pF
C_{rss}	Reverse Transfer Capacitance		--	80	--	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 250 V I_D = 8A d,e R_G = 25Ω	--	15	--	ns
t_r	Turn-On Rise Time		--	62	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	93	--	ns
t_f	Turn-Off Fall Time		--	48	--	ns
Q_g	Total Gate Charge	V_{DS} = 400 V I_D = 8A d,e V_{GS} = 10 V	--	26	--	nC
Q_{gs}	Gate-Source Charge		--	4	--	nC
Q_{gd}	Gate-Drain Charge		--	13	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain-Source Diode Forward Current		--	--	8	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	32	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} = 0 V, I_S = 3A	--	--	1.4	V
t_{rr}	Reverse Recovery Time	V_{GS} = 0 V, I_S = 8A dI /dt = 100 A/μs d	--	340	--	ns
Q_{rr}	Reverse Recovery Charge		--	3	--	μC

Notes:

a.Repetitive Rating: Pulse width limited by maximum junction temperature

b.L=5mH, I_{AS}=10.6A, V_{DD}=50V, V_G=10V,Starting T_J=25℃

c.I_{SD}≤8.0A, di/dt ≤ 200A/us, V_{DD} ≤ BV_{DSS}, Starting T_J = 25℃

d.Pulse Test: Pulse width ≤ 300us, Duty Cycle ≤ 2%

e.Essentially Independent of Operating Temperature Typical Characteristics