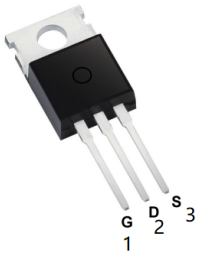
100 V N-Channel MOSFET

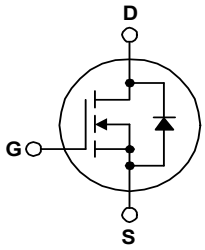
Description

This N-Channel MOSFET is has been tailored to mini-mize the on-state resistance while maintaining superior switching performance.



Features

- Fast Switching Speed
- Low Gate Charge, Q_G= 89 nC (Typ.)
- High Performance Trench Technology for Extremely Low $R_{DS(on)}$
- High Power and Current Handling Capability
- V_{DS}(V) =100V
- I_D =75A (V_{GS}= 10V)
- $R_{DS(ON)}$ <3.6mΩ (V_{GS} =10V)



Applications

- Synchronous Rectification for ATX / Server / Telecom PSU
- Battery Protection Circuit
- Motor Drives and Uninterruptible Power Supplies
- Micro Solar Inverter

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

Symbol	Parameter		FDP036N10A	Unit
V_{DSS}	Drain to Source Voltage		100	V
V_{GSS}	Gate to Source Voltage		±20	V
I_D	Drain Current	- Continuous (T_C = 25°C, Silicon Limited)	214*	A
		- Continuous (T_C = 100°C, Silicon Limited)	151*	
		- Continuous (T_C = 25°C, Package Limited)	120	
I_{DM}	Drain Current	- Pulsed (Note 1)	856	A
E_{AS}	Single Pulsed Avalanche Energy	(Note 2)	658	mJ
dv/dt	Peak Diode Recovery dv/dt	(Note 3)	6.0	V/ns
P_D	Power Dissipation	(T_C = 25°C)	333	W
		- Derate Above 25°C	2.22	W/°C
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	°C
T_L	Maximum Lead Temperature for Soldering, 1/8" from Case for 5 Seconds		300	°C

*Calculated continuous current based on maximum allowable junction temperature. Package limitation current is 120A.

Thermal Characteristics

Symbol	Parameter	FDP036N10A	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case, Max.	0.45	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient, Max.	62.5	

Electrical Characteristics $T_C = 25^oC$ unless otherwise noted.

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain to Source Breakdown Voltage	I_D = 250 μA, V_{GS} = 0 V, $T_C = 25^oC$	100			V
ΔBV_{DSS} / ΔT_J	Breakdown Voltage Temperature Coefficient	I_D = 250 μA, Referenced to 25^oC		0.03		$V/^oC$
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 80 V, V_{GS} = 0 V			1	μA
		V_{DS} = 80 V, $T_C = 150^oC$			500	
I_{GSS}	Gate to Body Leakage Current	V_{GS} = ±20 V, V_{DS} = 0 V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS} = V_{DS}, I_D = 250 μA	2.0	3.0	4.0	V
$R_{DS(on)}$	Static Drain to Source On Resistance	V_{GS} = 10 V, I_D = 75 A		3.2	3.6	mΩ
g_{FS}	Forward Transconductance	V_{DS} = 10 V, I_D = 75 A		167		S
C_{iss}	Input Capacitance	V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz		5485	7295	pF
C_{oss}	Output Capacitance			2430	3230	pF
C_{rss}	Reverse Transfer Capacitance			210	315	pF
$Q_{g(tot)}$	Total Gate Charge at 10V	V_{DS} = 80 V, I_D = 75 A, V_{GS} = 10 V (Note 4)		89	116	nC
Q_{gs}	Gate to Source Gate Charge			24		nC
Q_{gs2}	Gate Charge Threshold to Plateau			8		nC
Q_{gd}	Gate to Drain “Miller” Charge			25		nC
ESR	Equivalent Series Resistance (G-S)	f = 1 MHz		1.2		Ω
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 50 V, I_D = 75 A, V_{GS} = 10 V, R_G = 4.7 Ω (Note 4)		22	54	ns
t_r	Turn-On Rise Time			54	118	ns
$t_{d(off)}$	Turn-Off Delay Time			37	84	ns
t_f	Turn-Off Fall Time			11	32	ns
I_S	Maximum Continuous Drain to Source Diode Forward Current				214	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current				856	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0 V, I_{SD} = 75 A			1.25	V
t_{rr}	Reverse Recovery Time	V_{GS} = 0 V, I_{SD} = 75 A, dI_F/dt = 100 A/μs		72	93.6	ns
Q_{rr}	Reverse Recovery Charge			129		nC

Notes:

1. Repetitive rating: pulse-width limited by maximum junction temperature.
2. Starting T_J = 25°C, L = 1 mH, I_{AS} = 36.3 A.
3. $I_{SD} \le$ 75 A, di/dt ≤ 200 A/μs, $V_{DD} \le BV_{DSS}$, starting T_J = 25°C.
4. Essentially independent of operating temperature typical characteristics.

Typical Performance Characteristics

Figure 1. On-Region Characteristics

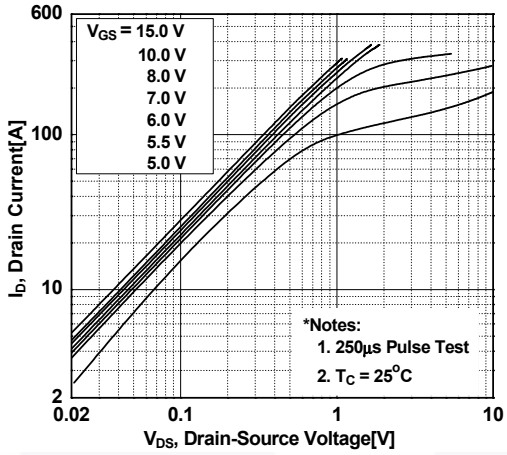


Figure 2. Transfer Characteristics

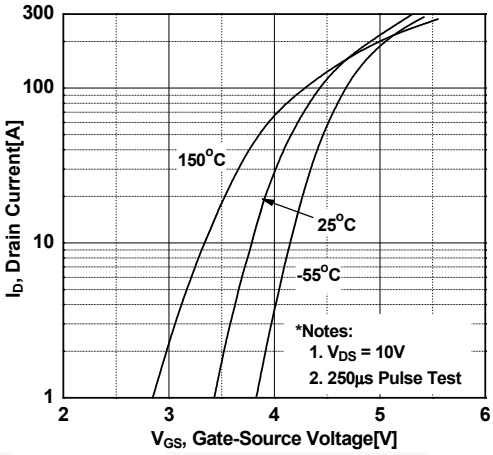


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

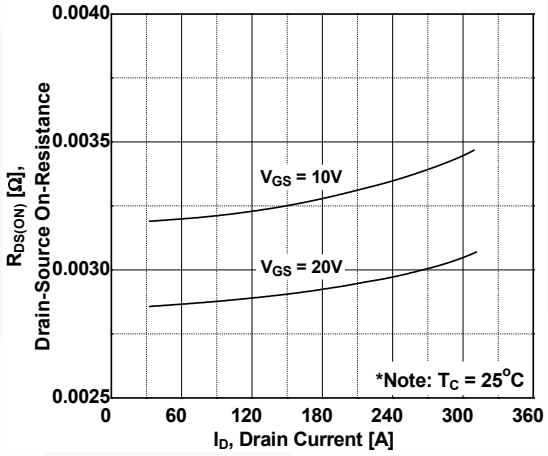


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

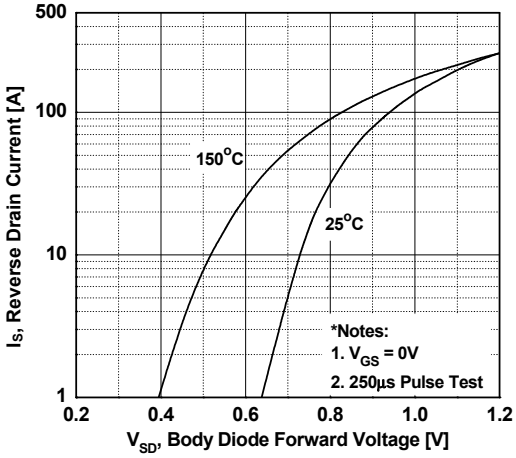


Figure 5. Capacitance Characteristics

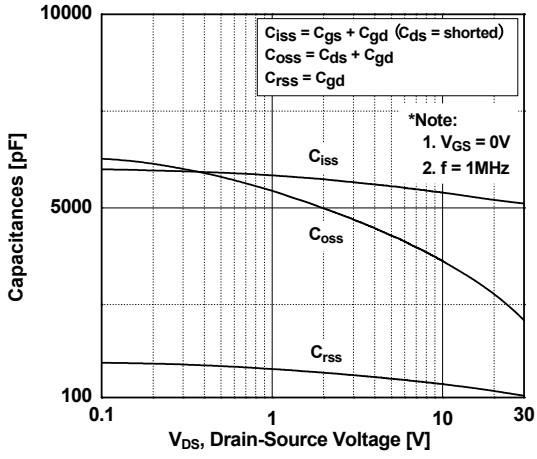
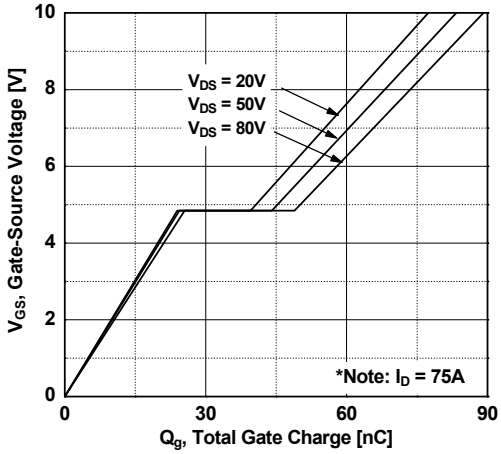


Figure 6. Gate Charge Characteristics



Typical Performance Characteristics

Figure 7. Breakdown Voltage Variation vs. Temperature

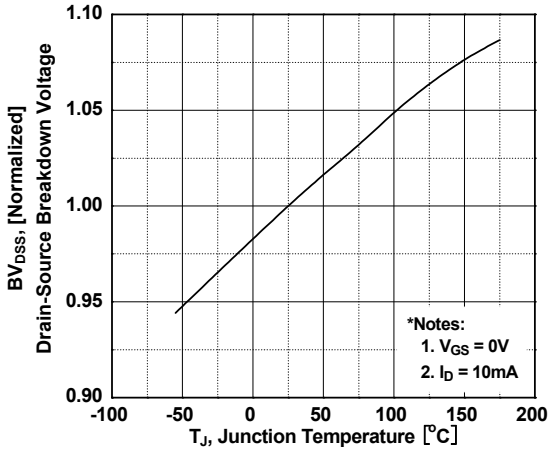


Figure 8. On-Resistance Variation vs. Temperature

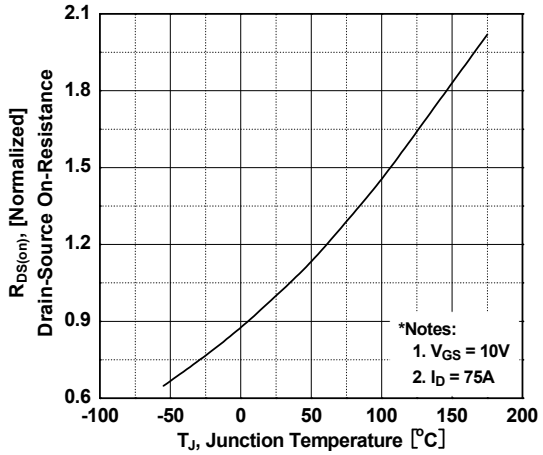


Figure 9. Maximum Safe Operating Area

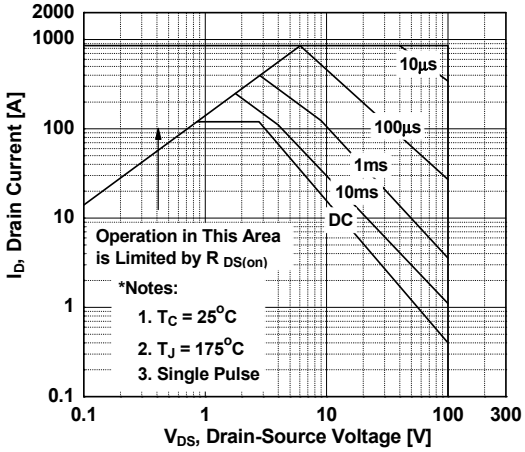


Figure 10. Maximum Drain Current vs. Case Temperature

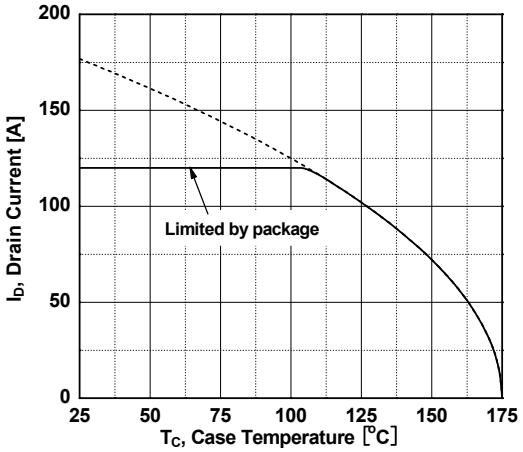
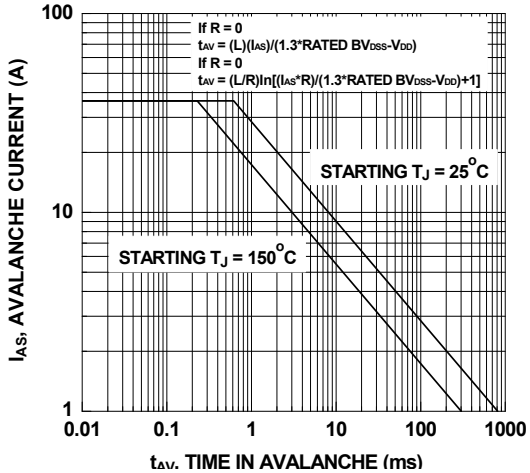
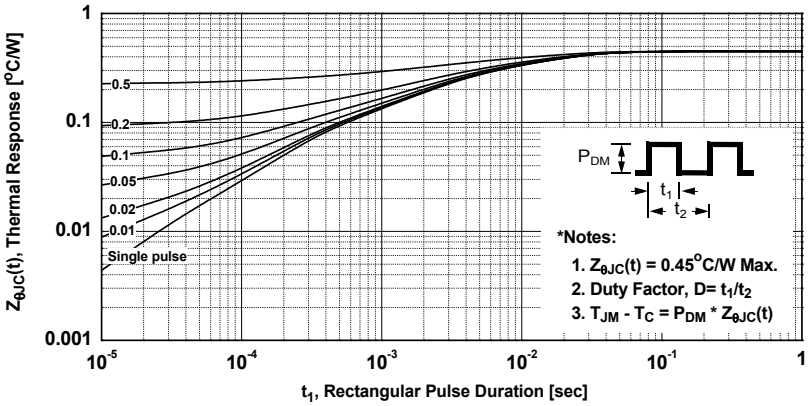


Figure 11. Unclamped Inductive Switching Capability



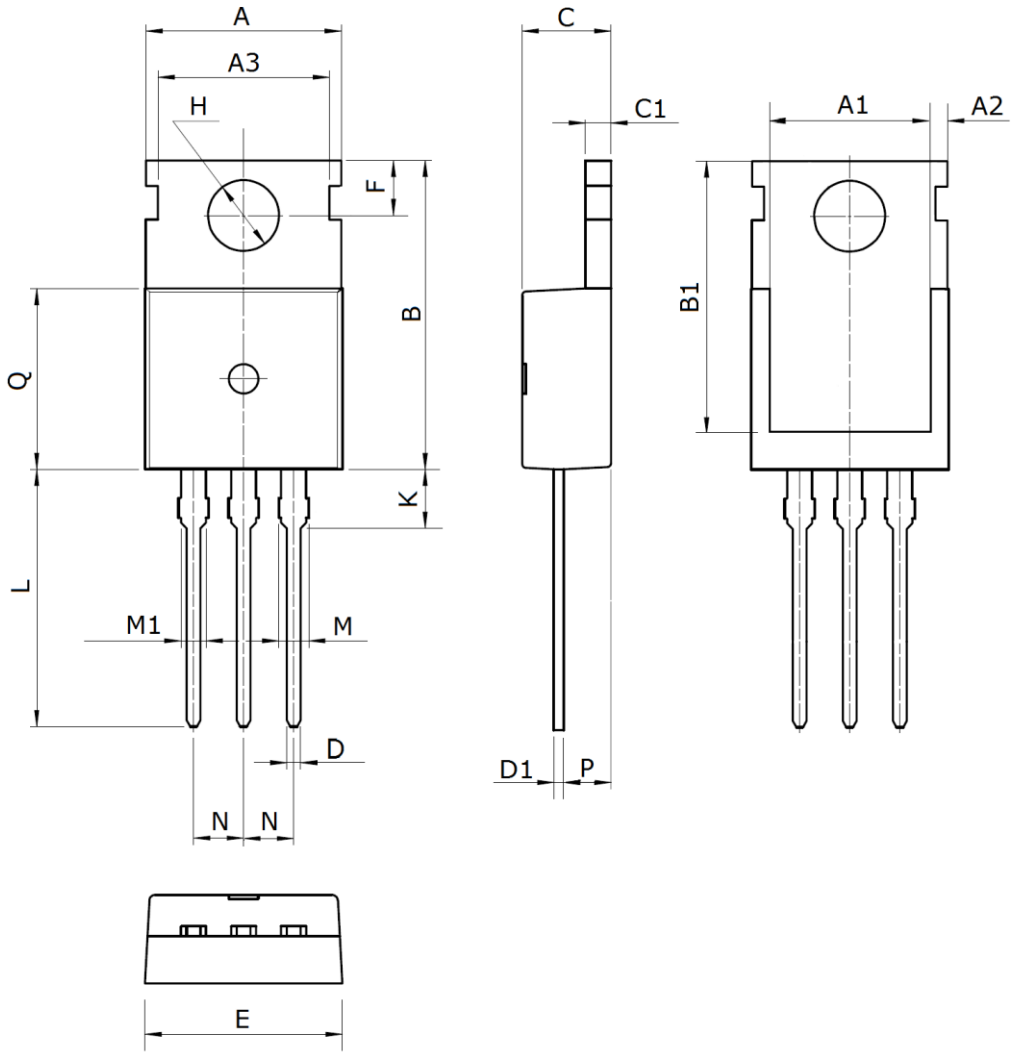
Typical Performance Characteristics

Figure 12. Transient Thermal Response Curve



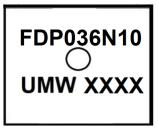
Package Demensions

TO 220



Symbol	Dimensions （mm）	Symbol	Dimensions (mm)	Symbol	Dimensions (mm)
A	10.0±0.3	C1	1.3±0.2	L	13.2±0.4
A1	8.0±0.2	D	0.8±0.2	M	1.38±0.1
A2	0.94±0.1	D1	0.5±0.1	M1	1.28±0.1
A3	8.7±0.1	E	10.0±0.3	N	2.54(typ)
B	15.6±0.4	F	**2.8±0.1**	P	2.4±0.3
B1	**13.2±0.2**	H	3.6±0.1	Q	**9.15±0.25**
C	**4.5±0.2**	K	3.1±0.2		

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
UMW FDP036N10A	TO-220	1000	Tube and box

单击下面可查看定价，库存，交付和生命周期等信息

>>UMW(友台半导体)