

1.Description

The 15N10 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a wide variety of applications.

2.2Features

- Low Total Gate Charge
- Low Reverse Transfer Capacitance

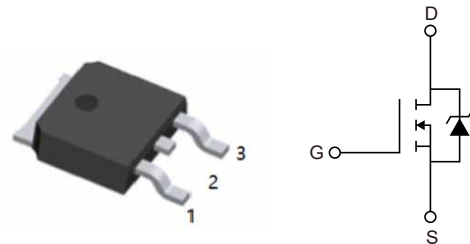
2.1Features

- $V_{DS(V)}=100V$
- $I_D=15A(V_{GS}=10V)$
- $R_{DS(ON)}<95m\Omega(V_{GS}=10V)$
- $R_{DS(ON)}<100m\Omega(V_{GS}=4.5V)$

3.Pinning information

Pin	Symbol	Description
1	G	GATE
2	D	DRAIN
3	S	SOURCE

TO-252(DPAK)
top view



4.Absolute Maximum Ratings $T_A = 25^\circ C$

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	
Drain Current-Continuous	$T_C=25^\circ C$ ^{Note1}	I_D	15	A
	$T_C=100^\circ C$		10	
Drain Current-Pulsed ^{Note2}		I_{DM}	60	
Maximum Power Dissipation		P_D	55	W
Storage Temperature Range	$T_C=25^\circ C$	T_{STG}	-55 to 175	$^\circ C$
Junction Temperature Range		T_J	-55 to 175	$^\circ C$



5.Thermal resistance rating

Parameter	Symbol	Typ	Max	Units
Thermal Resistance,Junction-to-Case	R_{thJC}		2.72	°C/W



6.SPECIFICATIONS (T_J= 25°C, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _{DS} =250μA	100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate-Body Leakage	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
ON CHARACTERISTIC						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _{DS} =250μA	1	1.6	3.0	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _{DS} =10A		95	110	mΩ
		V _{GS} =4.5V, I _{DS} =5A		100	130	mΩ
Forward Transconductance	g _{FS}	V _{GS} =5V, I _{DS} =4A	2			S
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=1MHz		632		pF
Output Capacitance	C _{oss}			37		pF
Reverse Transfer Capacitance	C _{rss}			21		pF
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{D(on)}	V _{GS} =10V, V _{DS} =50V, R _L =2.8Ω R _{GEN} =6Ω, I _D =10A		12.6		ns
Rise Time	t _r			6		ns
Turn-Off Delay Time	t _{D(off)}			32.5		ns
Fall Time	t _f			4.3		ns
Total Gate Charge at 10V	Q _g	V _{DS} =80V, I _{DS} =10A, V _{GS} =10V		19.2		nC
Gate to Source Gate Charge	Q _{gs}			3.4		nC
Gate to Drain“Miller”Charge	Q _{gd}			6.1		nC



DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS						
Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_{DS}=10A$			1.2	V

- Notes 1.The maximum current rating is package limited.
- Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature.
- Notes 3. E_{AS} condition: $T_J=25^{\circ}C, V_{DD}=50V, V_G=10V, R_G=25\Omega$.



7.1 Typical Characteristics

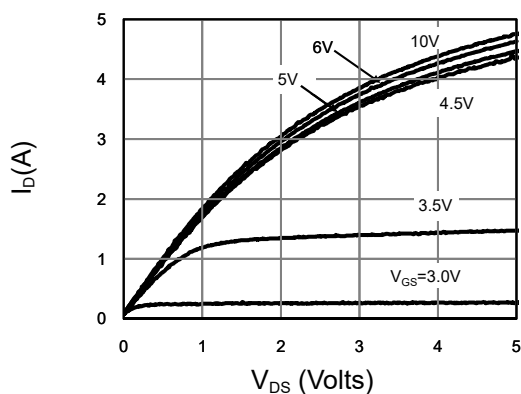


Fig 1: On-Region Characteristics (Note E)

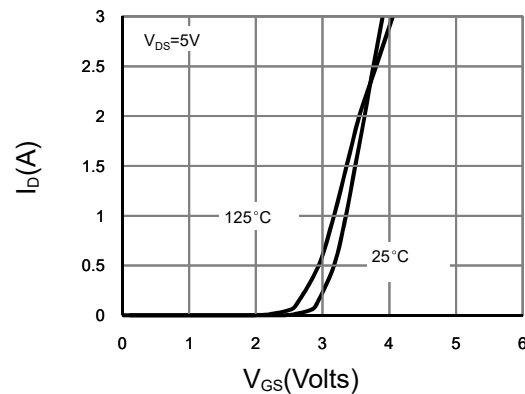


Figure 2: Transfer Characteristics (Note E)

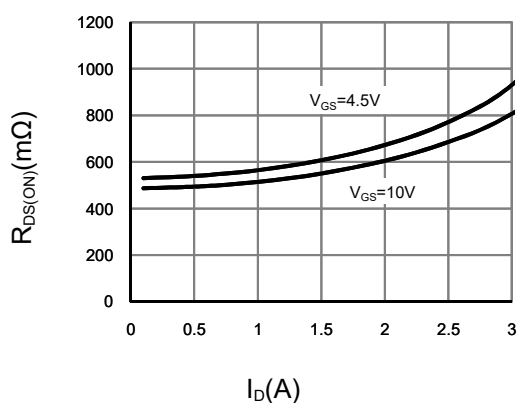


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

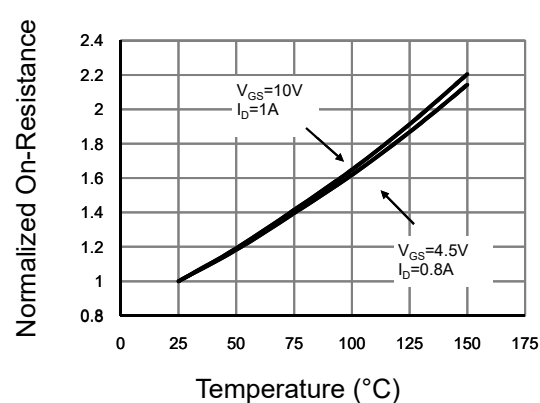


Figure 4: On-Resistance vs. Junction Temperature (Note E)

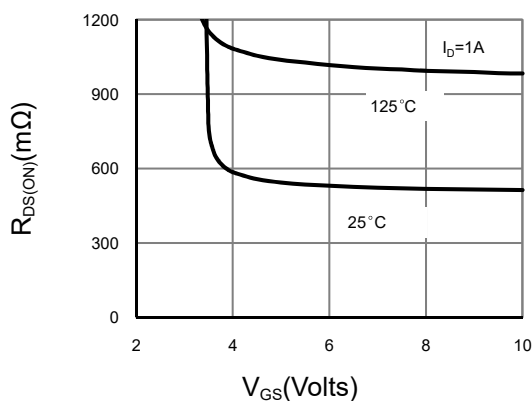


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

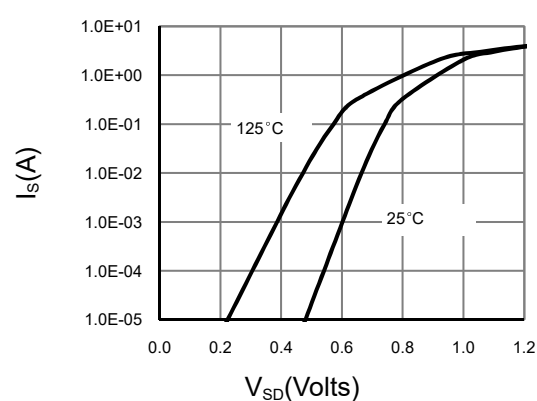


Figure 6: Body-Diode Characteristics (Note E)



7.2 Typical Characteristics

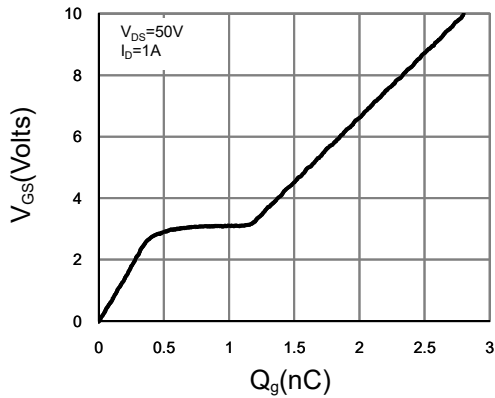


Figure 7: Gate-Charge Characteristics

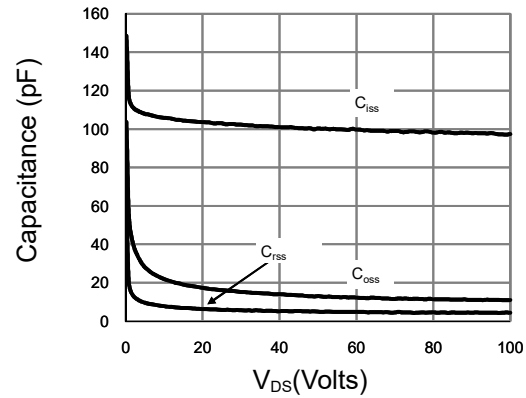


Figure 8: Capacitance Characteristics

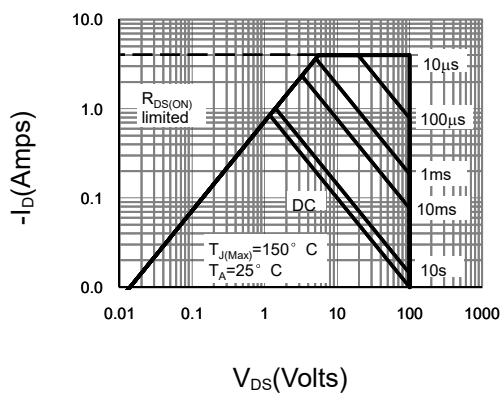


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

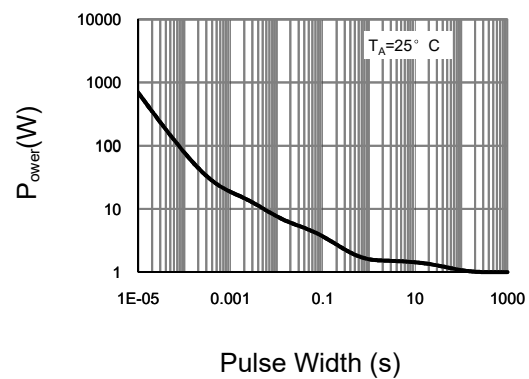


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

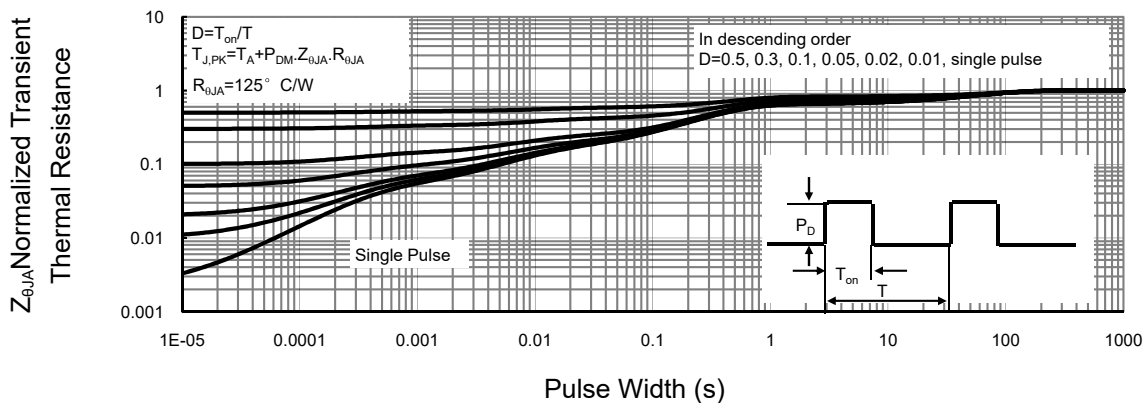
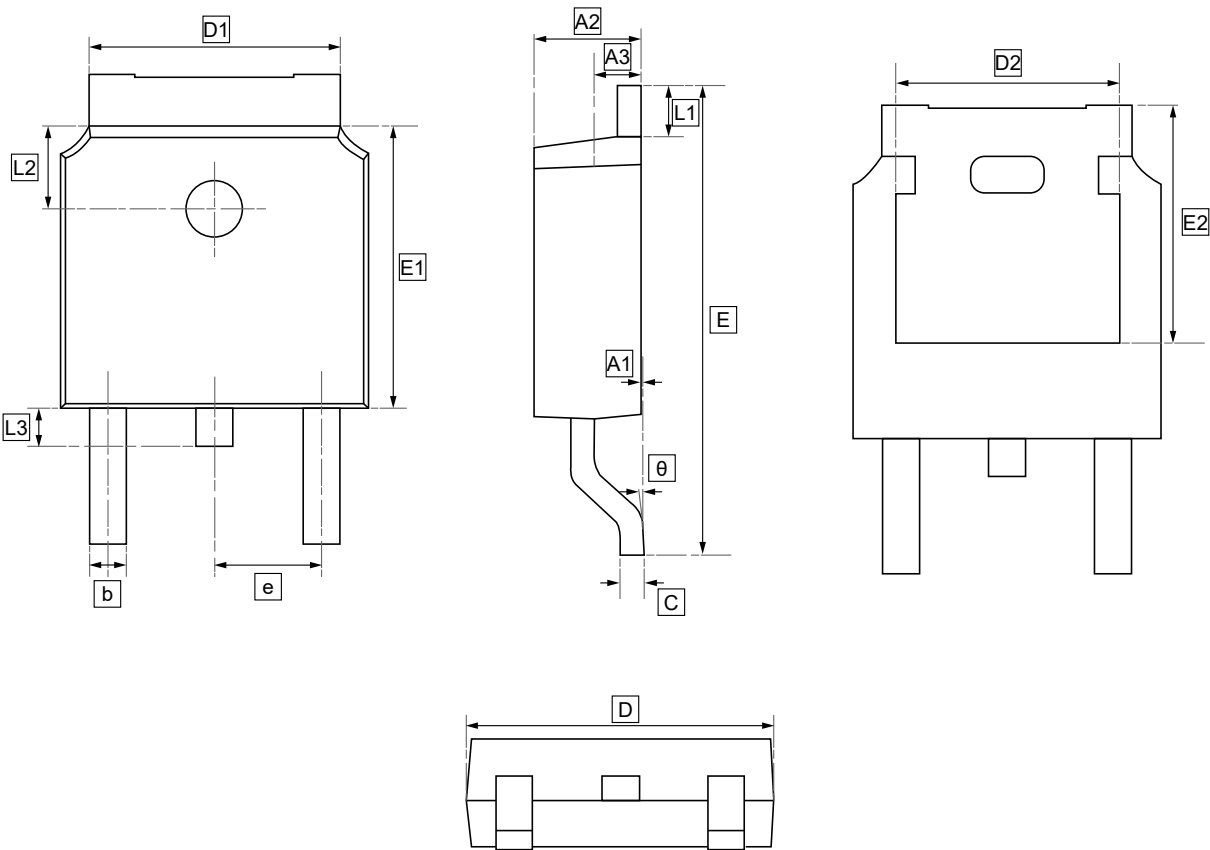


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)



8.TO-252 Package Outline Dimensions

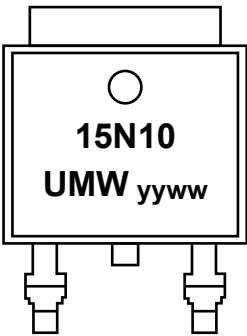


DIMENSIONS (mm are the original dimensions)

Symbol	A1	A2	A3	b	c	D	D1	D2	E	E1	E2	e	L1	L2	L3	θ
Min	0.00	2.18	0.90	0.65	0.46	6.35	4.95	4.32	9.40	5.97	5.21	2.286	0.89	1.70	0.60	0.00
Max	0.13	2.39	1.10	0.85	0.61	6.73	5.46	4.90	10.41	6.22	5.38		1.27	1.90	1.00	8.00



9.Ordering information



yy: Year Code
ww: Week Code

Order Code	Package	Base QTY	Delivery Mode
UMW 15N10	TO-252	2500	Tape and reel



10.Disclaimer

UMW reserves the right to make changes to all products, specifications. Customers should obtain the latest version of product documentation and verify the completeness and currency of the information before placing an order.

When applying our products, please do not exceed the maximum rated values, as this may affect the reliability of the entire system. Under certain conditions, any semiconductor product may experience faults or failures. Buyers are responsible for adhering to safety standards and implementing safety measures during system design, prototyping, and manufacturing when using our products to prevent potential failure risks that could lead to personal injury or property damage.

Unless explicitly stated in writing, UMW products are not intended for use in medical, life-saving, or life-sustaining applications, nor for any other applications where product failure could result in personal injury or death. If customers use or sell the product for such applications without explicit authorization, they assume all associated risks.

When reselling, applying, or exporting, please comply with export control laws and regulations of China, the United States, the United Kingdom, the European Union, and other relevant countries, regions, and international organizations.

This document and any actions by UMW do not grant any intellectual property rights, whether express or implied, by estoppel or otherwise. The product names and marks mentioned herein may be trademarks of their respective owners.