Wuxi Unigroup Microelectronics CO.,LTD.

30V P-Channel Trench MOSFET(Preliminary)

General Description

- Trench Power technology
- Low $R_{DS(ON)}$
- Low Gate Charge
- Optimized for fast-switching applications

Applications

- Synchronous Rectification in DC/DC and AC/DC Converters
- Isolated DC/DC Converters in Telecom and Industrial

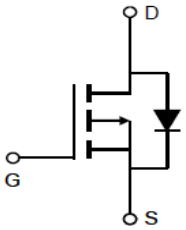
Product Summary

V_{DS}	-30V
I_D (at V_{GS}=10V)	-40A
$R_{DS(ON)}$ (at V_{GS}=-10V)	< 19mΩ
$R_{DS(ON)}$ (at V_{GS}=-4.5V)	< 32mΩ

100% UIS Tested

RoHS

TO-252



Part Number	Package Type	Form	Marking
TTD40P03AT	TO-252	Tape&Reel	40P03AT

Absolute Maximum Ratings (T_A =25°C unless otherwise noted)

Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	- 30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [B]	T_C =25°C	I_D	-40	A
	T_C =100°C		-28	
Pulsed Drain Current [A]		I_{DM}	-120	A
Avalanche Current [A]		I_{AS}	-20	A
Single Pulse Avalanche Energy L =0.3mH [A]		E_{AS}	60	mJ
Power Dissipation [C]	T_C =25°C	P_D	60	W
	T_C =100°C		30	W
Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 175	°C

Thermal Characteristics

Parameter		Symbol	Maximum	Units
Maximum Junction-to-Case	Steady-State	$R_{\theta JC}$	2.5	°C/W
Maximum Junction-to-Ambient	Steady-State	$R_{\theta JA}$	100	

Electrical Characteristics(T_J =25ºC unless otherwise noted)

Symbol	Parameter	Conditions		Value			Units
				Min	Typ	Max	
STATIC PARAMETERS							
BV_{DSS}	Drain-Source Breakdown Voltage	I_D =-250μA,V_{GS} =0V		-30			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =-30V, V_{GS} =0V	T_J =25ºC			-1	μA
			T_J =100ºC			-100	
I_{GSS}	Gate-Body Leakage Current	V_{DS} =0V, V_{GS} =±20V				±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} =V_{GS}, I_D =-250μA		-1	-1.7	-2.4	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS} =-10V, I_D =-20A			14	19	mΩ
		V_{GS} =-4.5V, I_D =-20A			27	32	mΩ
g_{FS}	Forward Transconductance	V_{DS} =-5V, I_D =-20A			20		S
V_{SD}	Diode Forward Voltage	I_S =-15A, V_{GS} =0V				-1	V
I_S	Maximum Body-Diode Continuous Current [B]					-40	A
DYNAMIC PARAMETERS							
C_{iss}	Input Capacitance	V_{GS} =0V, V_{DS} =-20V, f =1MH_Z			2500		pF
C_{oss}	Output Capacitance				288		
C_{rss}	Reverse Transfer Capacitance				254		
SWITCHING PARAMETERS							
Q_g(10V)	Total Gate Charge	V_{GS} =-10V,V_{DS} =-20V, I_D =-20A			50		nC
Q_{gs}	Gate Source Charge				12		
Q_{gd}	Gate Drain Charge				8		
$t_{D(on)}$	Turn-On Delay Time	V_{GS} =-10V,V_{DS} =-20V, I_D =-20A, R_G =2.5Ω			12		ns
t_r	Turn-On Rise Time				17		
$T_{D(off)}$	Turn-Off Delay Time				54		
t_f	Turn-Off Fall Time				24		
t_{rr}	Body Diode Reverse Recovery Time	I_F =-20A, di/dt =100A/μs			28		ns
Q_{rr}	Body Diode Reverse Recovery Charge				19		nC

A. Single pulse width limited by maximum junction temperature.

B. The maximum current rating is package limited.

C. The power dissipation P_D is based on $T_{J(MAX)}$ =175ºC, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.

Typical Characteristics T_J = 25ºC, unless otherwise noted

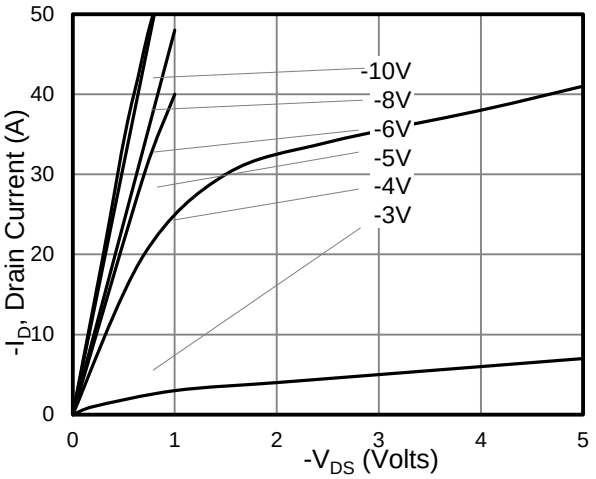


Figure 1: On-Region Characteristics

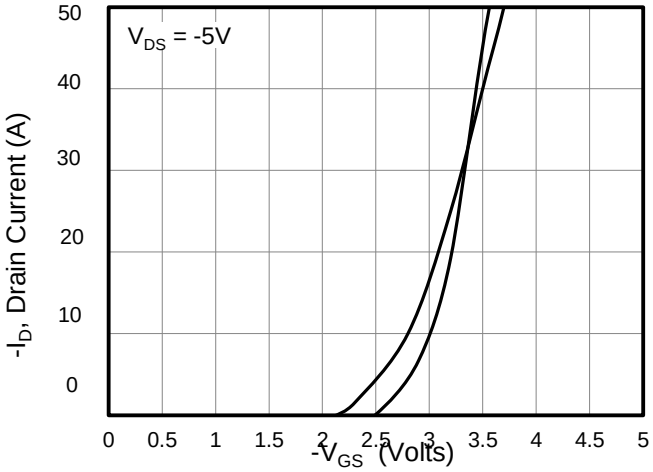


Figure 2: Transfer Characteristics

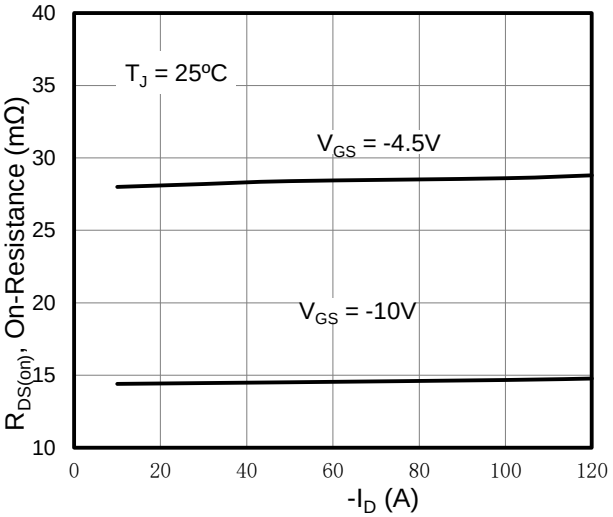


Figure 3: On-Resistance vs. Drain Current

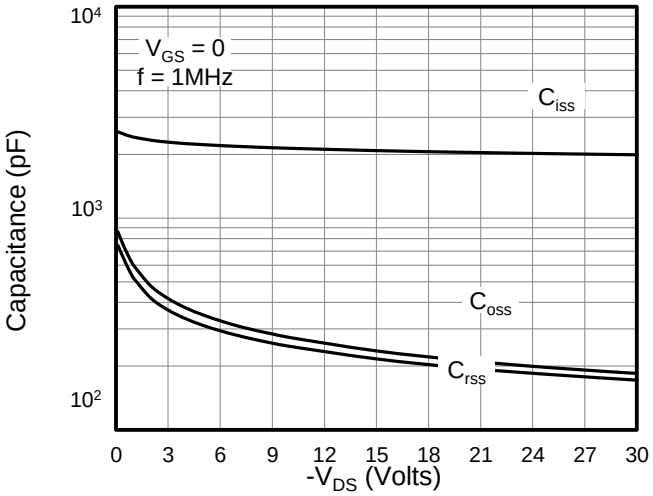


Figure 4: Capacitance Characteristics

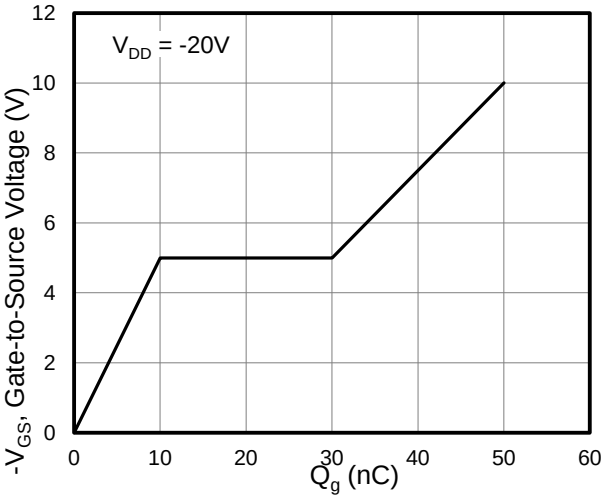


Figure 5: Gate Charge Characteristics

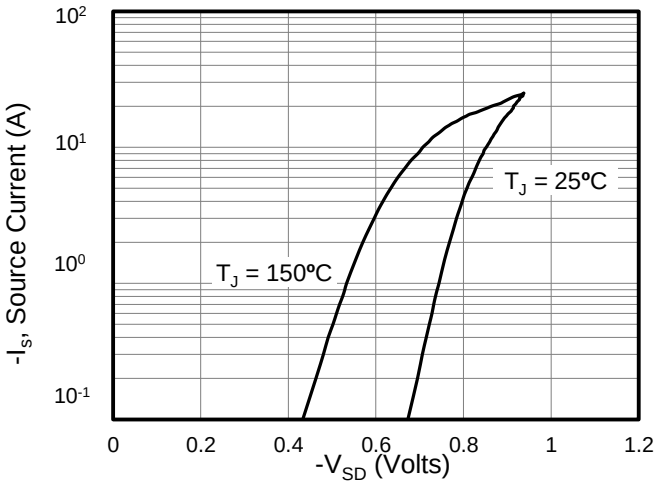


Figure 6: Body Diode Forward Voltage

Typical Characteristics T_J = 25ºC, unless otherwise noted

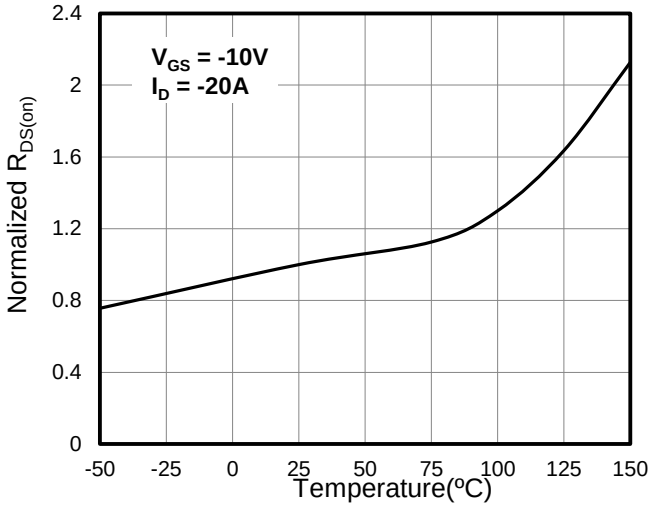


Figure 7: On-Resistance vs. Junction Temperature

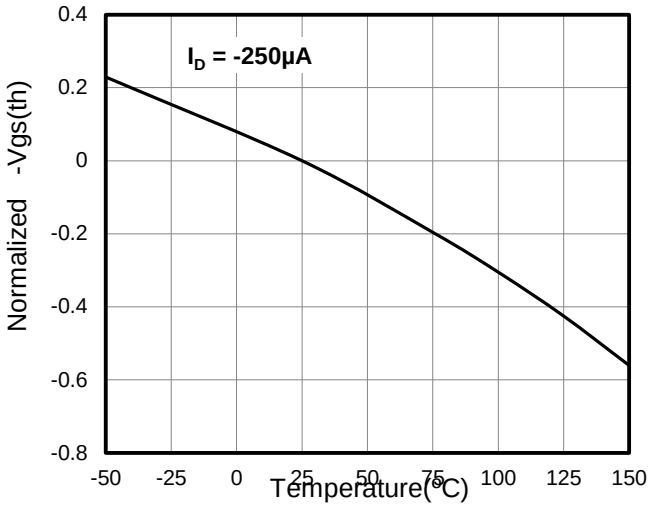


Figure 8: Vgs(th) vs. Junction Temperature

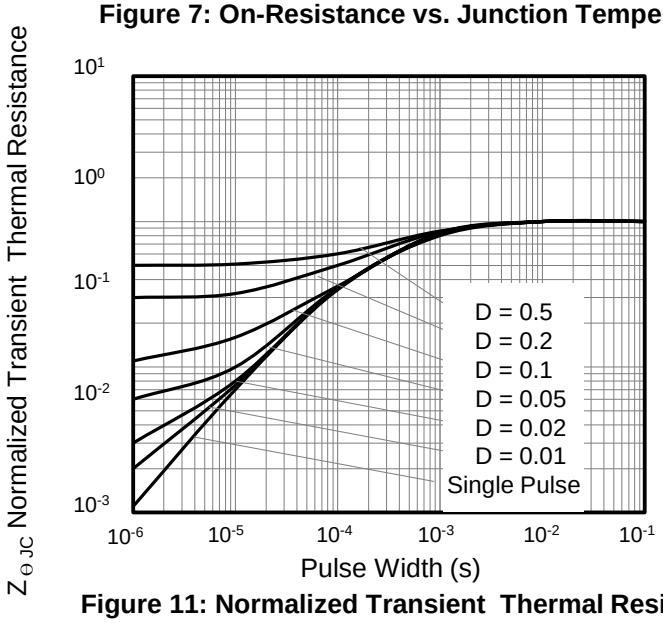


Figure 11: Normalized Transient Thermal Resistance

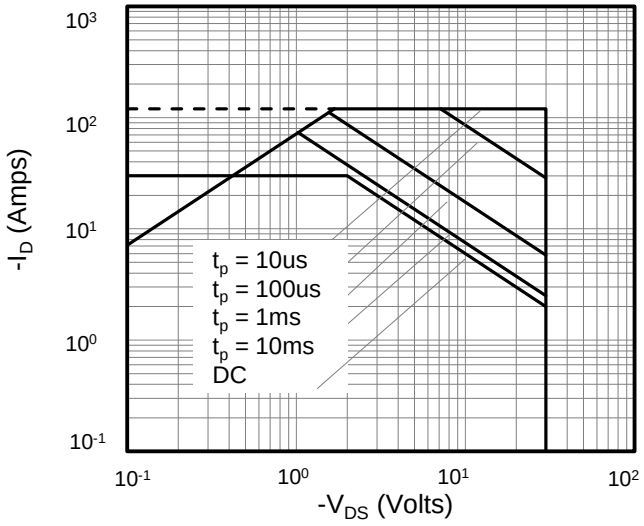


Figure 12: Safe Operating Area

Figure A：Gate Charge Test Circuit and Waveform

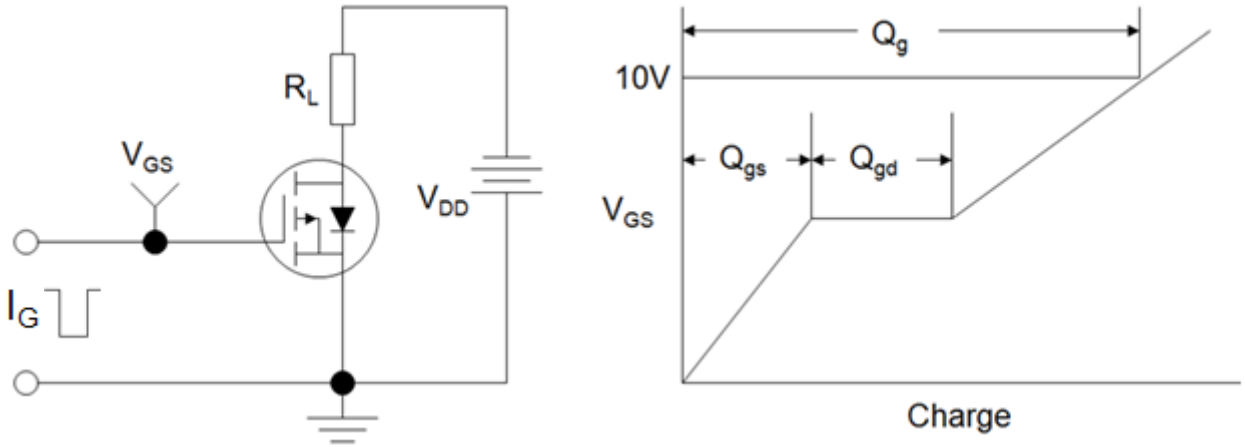


Figure B：Resistive Switching Test Circuit and Waveform

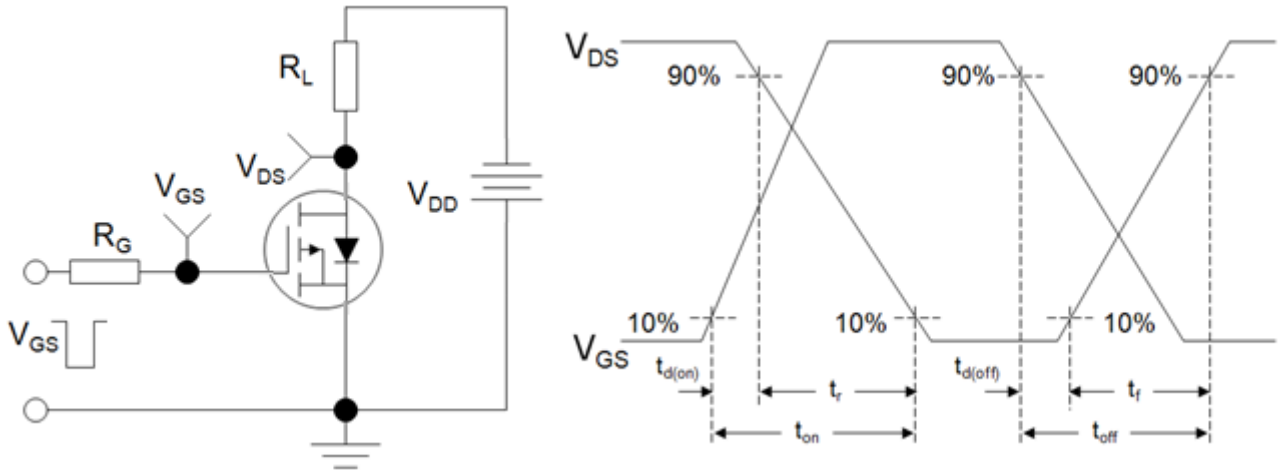
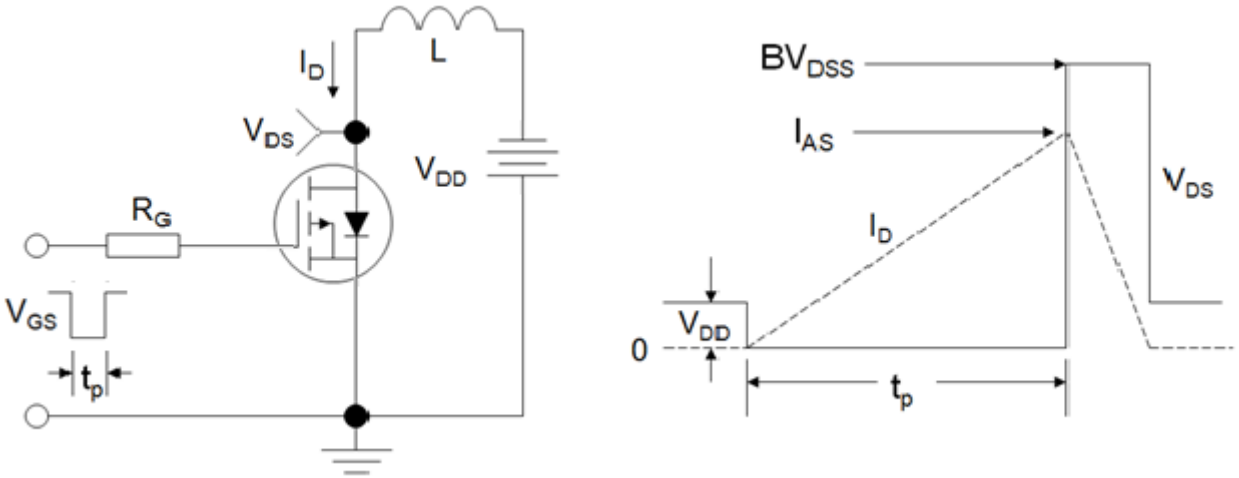
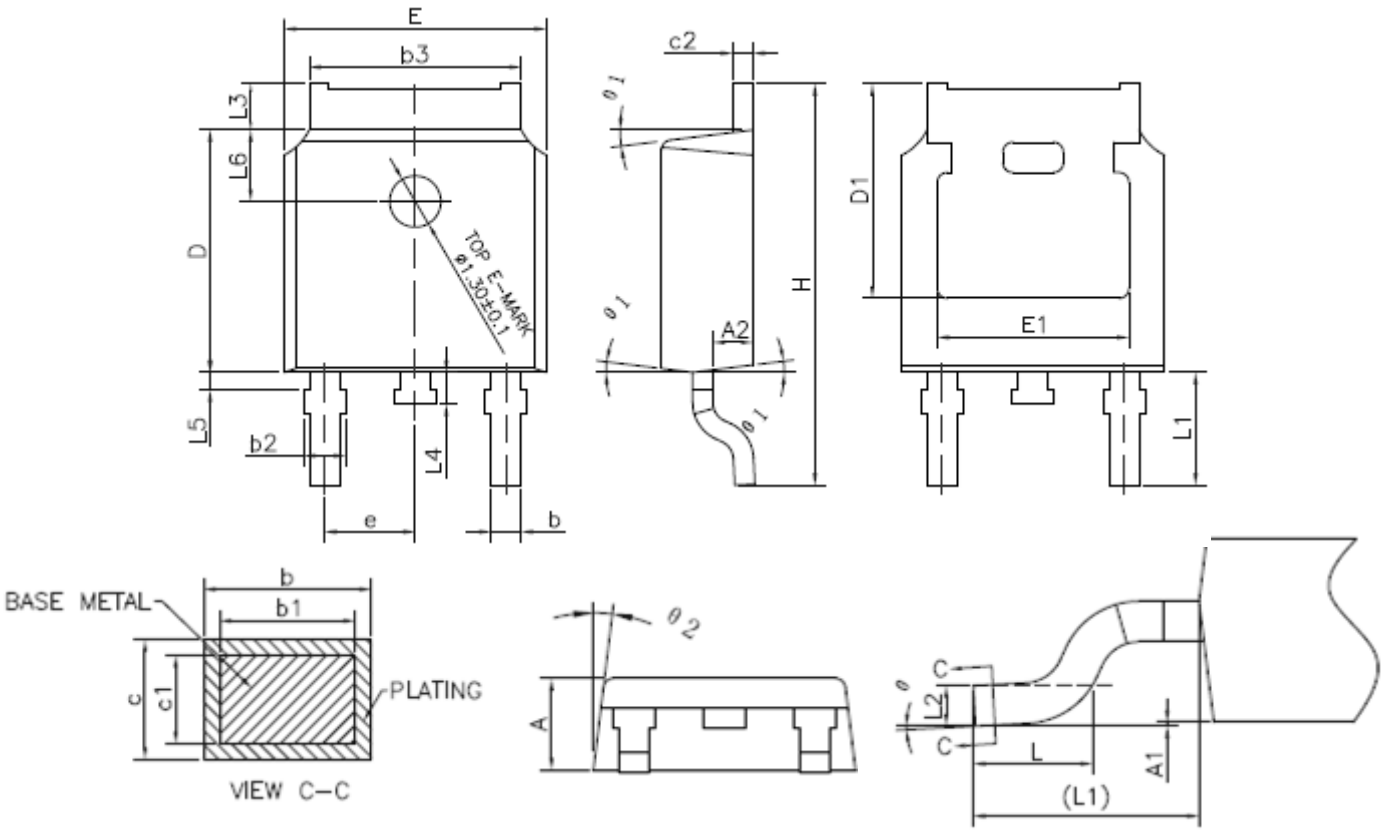


Figure C：Unclamped Inductive Switching Test Circuit and Waveform



TO-252(集佳)



SYMBOL	MIN	NOM	MAX
A	2,20	2,30	2,38
A1	0	—	0,10
A2	0,90	1,01	1,10
b	0.72	—	0.85
b1	0.71	0.76	0.81
b2	0.72	—	0.90
b3	5.13	5.33	5.46
c	0.47	—	0.60
c1	0,46	0,51	0,56
c2	0,47	—	0,60
D	6,00	6,10	6,20
D1	5,25	—	—
E	6.50	6.60	6.70
E1	4.70	—	—
e	2.186	2.286	2.386
H	9.80	10.10	10.40
L	1,40	1,50	1,70
L1	2,90 REF		
L2	0,508 BSC		
L3	0,90	—	1,25
L4	0,60	0,80	1,00
L5	0.15	—	0.75
L6	1.80 REF		
θ	0°	—	8°
θ1	5°	7°	9°
θ2	5°	7°	9°

Disclaimer

All product specifications and data are subject to change without notice.

For documents and material available from this datasheet, Wuxi Unigroup does not warrant or assume any legal liability or responsibility for the accuracy, completeness of any product or technology disclosed hereunder.

No license, express or implied, by estoppels or otherwise, to any intellectual property rights is granted by this document or by any conduct of Wuxi Unigroup.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling Wuxi Unigroup products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Wuxi Unigroup for any damages arising or resulting from such use or sale.

Wuxi Unigroup disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Wuxi Unigroup's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

Wuxi Unigroup Microelectronics CO., LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.

In the event that any or all Wuxi Unigroup products (including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.

Information (including circuit diagrams and circuit parameters) herein is for example only. It is not guaranteed for volume production. Wuxi Unigroup believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for MOSFET ***category:***

Click to view products by UNIGROUP ***manufacturer:***

Other Similar products are found below :

614233C 648584F NTNS3A92PZT5G IRFD120 IRFF430 JANTX2N5237 2N7000 2SK2464-TL-E FCA20N60_F109 FDZ595PZ AOD464 2SK2267(Q) 2SK2545(Q,T) 405094E 423220D MIC4420CM-TR VN1206L 614234A 715780A SSM6J414TU,LF(T 751625C IPP60R600P6XKSA1 RJK60S5DPK-M0#T0 PSMN4R2-30MLD TK31J60W5,S1VQ(O 2SK2614(TE16L1,Q) DMN1017UCP3-7 EFC2J004NUZTDG FCAB21350L1 P85W28HP2F-7071 DMN1053UCP4-7 NTE2384 NTE2969 NTE6400A DMN61D9UWQ-13 US6M2GTR DMN31D5UDJ-7 SSM6P54TU,LF DMP22D4UFO-7B IPS60R3K4CEAKMA1 DMN1006UCA6-7 DMN16M9UCA6-7 STF5N65M6 STU5N65M6 C3M0021120D DMN13M9UCA6-7 BSS340NWH6327XTSA1 MCM3400A-TP DMTH10H4M6SPS-13 IRF40SC240ARMA1