

Description

N-channel Enhancement Mode Power MOSFET

Features

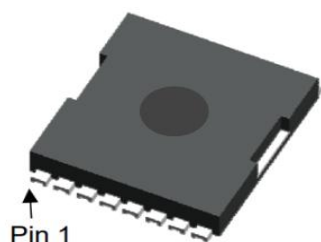
- 100V, 290A
 $R_{DS(ON)} < 2m\Omega @ V_{GS} = 10V$
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge

Applications

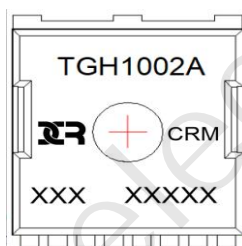
- Load Switch
- PWM Application
- Power Management



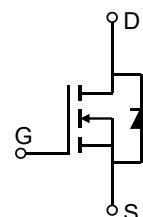
100% UIS TESTED!
 100% ΔV_{ds} TESTED!



TOLL



Marking and Pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	Outline	Package	Reel Size	Reel(pcs)	Per Carton (pcs)
CRMTGH1002A	CRMTGH1002A	TAPING	TOLL	13"	2000	10000

Absolute Maximum Ratings (@ $T_c = 25^\circ C$ unless otherwise specified)

Symbol	Parameter	Value	Units
V_{DS}	Drain-to-Source Voltage	100	V
V_{GS}	Gate-to-Source Voltage	± 20	V
I_D	Continuous Drain Current	$T_c = 25^\circ C$	290
		$T_c = 100^\circ C$	183
I_{DM}	Pulsed Drain Current ⁽¹⁾	1160	A
E_{AS}	Single Pulsed Avalanche Energy ⁽²⁾	729	mJ
P_D	Power Dissipation	$T_c = 25^\circ C$	313
$R_{\theta JC}$	Thermal Resistance, Junction to Case	0.4	$^\circ C/W$
T_J, T_{STG}	Junction & Storage Temperature Range	-55 to 175	$^\circ C$



Electrical Characteristics (T_J = 25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	I _D = 250μA, V _{GS} = 0V	100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 100V, V _{GS} = 0V	-	-	1.0	μA
I _{GSS}	Gate-Body Leakage Current	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2.0	2.8	4.0	V
R _{DS(ON)}	Static Drain-Source ON-Resistance ⁽⁴⁾	V _{GS} = 10V, I _D = 30A	-	1.7	2.0	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = 50V, f = 1MHz	-	10123	-	pF
C _{oss}	Output Capacitance		-	2049	-	pF
C _{rss}	Reverse Transfer Capacitance		-	77	-	pF
Q _g	Total Gate Charge	V _{GS} = 0 to 10V V _{DS} = 50V, I _D = 90A	-	140	-	nC
Q _{gs}	Gate Source Charge		-	48	-	nC
Q _{gd}	Gate Drain("Miller") Charge		-	30	-	nC
Switching Characteristics						
t _{d(on)}	Turn-On DelayTime	V _{GS} = 10V, V _{DD} = 50V I _D = 90A, R _{GEN} = 3Ω	-	30	-	ns
t _r	Turn-On Rise Time		-	105	-	ns
t _{d(off)}	Turn-Off DelayTime		-	81	-	ns
t _f	Turn-Off Fall Time		-	109	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	290	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	1160	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S = 30A	-	-	1.4	V
t _{rr}	Body Diode Reverse Recovery Time	I _F = 90A, di/dt = 100A/us	-	56	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	96	-	nC

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 2. E_{AS} condition: Starting T_J=25C, V_{DD}=20V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=54A
 3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

Test Circuit

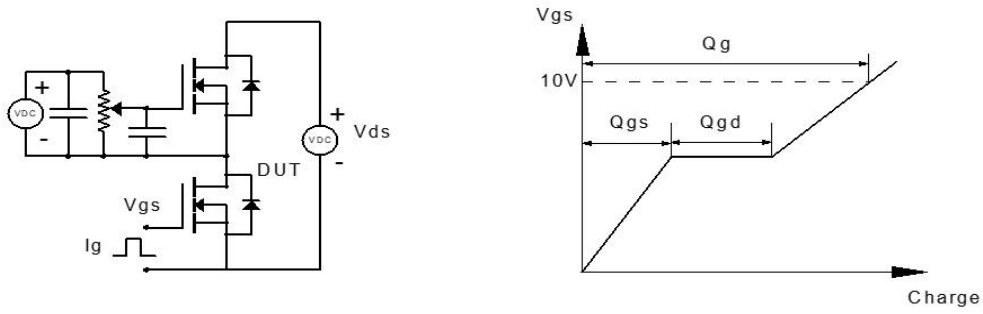


Figure 1: Gate Charge Test Circuit & Waveform

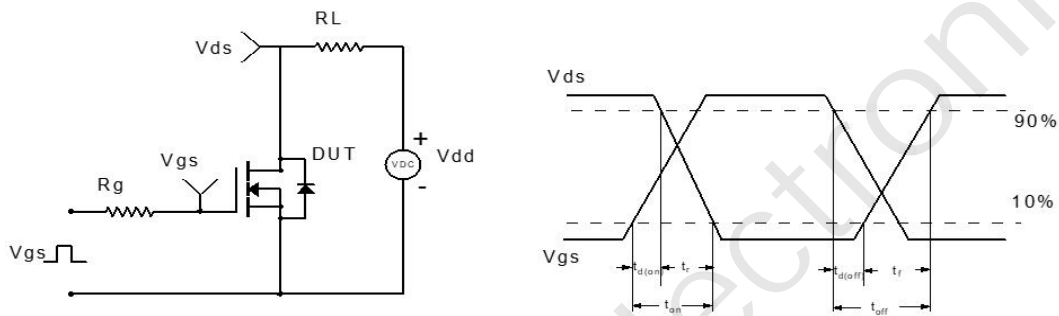


Figure 2: Resistive Switching Test Circuit & Waveform

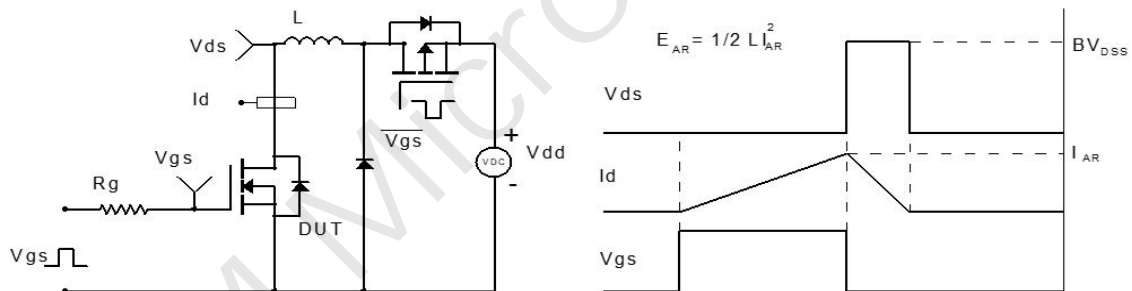


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

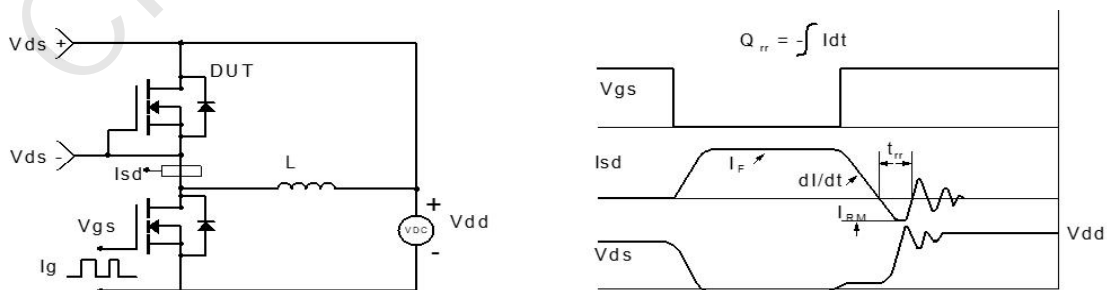
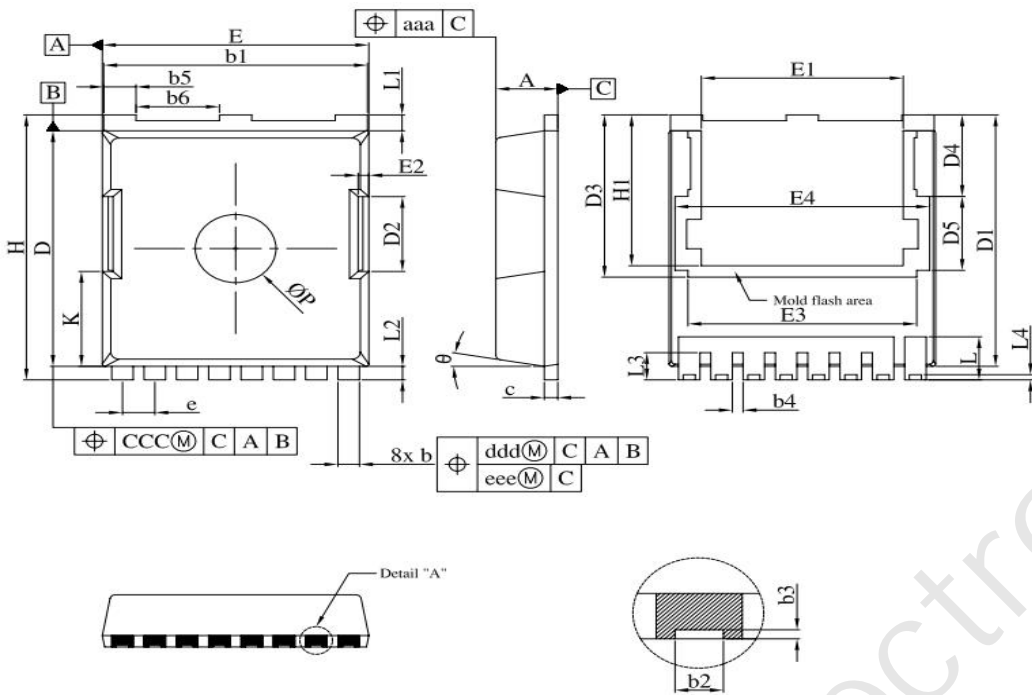


Figure 4: Diode Recovery Test Circuit & Waveform



Package Mechanical Data(TOLL)



SYMBOL	COMMON		
	MILLIMETER		
	MIN.	NOMINAL	MAX.
A	2.20	2.30	2.40
b	0.70	0.80	0.90
b1	9.70	9.80	9.90
b2	0.36	0.45	0.55
b3	0.05	0.100	/
b4	0.30	0.40	0.50
b5	1.10	1.20	1.30
b6	3.00	3.10	3.20
c	0.40	0.50	0.60
D	10.28	10.38	10.55
D1	10.98	11.08	11.18
D2	3.20	3.30	3.40
D3	7.15		
D4	3.59		
D5	3.26		
e	1.10	1.20	1.30
E	9.80	9.90	10.00
E1	7.40	7.50	7.60
E2	0.30	0.40	0.50
E3	8.50		
E4	9.46		
H	11.50	11.68	11.85
H1	6.55	6.65	6.75
K	4.08	4.18	4.28
L	1.60	1.90	2.10
L1	0.50	0.70	0.90
L2	0.50	0.60	0.70
L3	1.00	1.20	1.30
L4	0.13	0.23	0.33
P	2.85	3.00	3.15
θ	10° REF		
aaa	0.20		
ccc	0.20		
ddd	0.25		
eee	0.20		

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