CRMEGH0602A

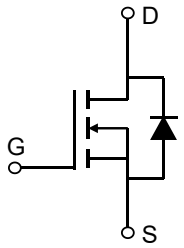
N-Channel 60V, 1.8mΩ Typ. Power MOSFET

Description

Features

- 60V, 200A

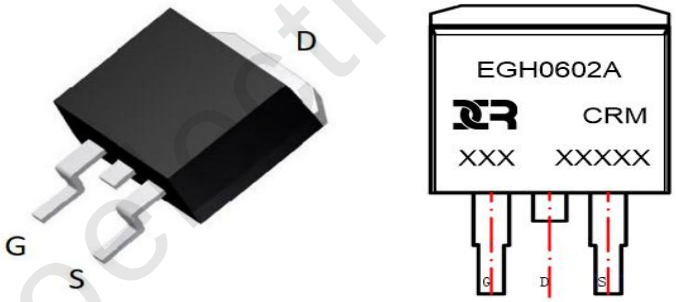
  $R_{DS(ON)}$ Typ = 1.8mΩ @ V_{GS} = 10V
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔVds TESTED!



Schematic Diagram

Application

- Load Switch
- PWM Application
- Power Management



Marking and Pin Assignment

Package Marking and Ordering Information

Device	Marking	Package	Outline	Reel Size	Reel (pcs)	Per Carton (pcs)
CRMEGH0602A	CRMEGH0602A	TO-263-3L	TAPING	13"	800	4000

Absolute Maximum Ratings (@ T_J = 25°C unless otherwise specified)

Symbol	Parameter		Value	Units
V_{DS}	Drain-to-Source Voltage		60	V
V_{GS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C = 25°C	200	A
		T_C = 100°C	120	A
I_{DM}	Pulsed Drain Current (1)		800	A
E_{AS}	Single Pulsed Avalanche Energy (2)		784	mJ
P_D	Power Dissipation	T_C = 25°C	138	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		0.9	°C/W
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	°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	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 60V, 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	3	4	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(3)	V_{GS} = 10V, I_D = 30A	-	1.8	2.2	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	-	7397	-	pF
C_{oss}	Output Capacitance		-	3885	-	pF
C_{rss}	Reverse Transfer Capacitance		-	203	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 10V V_{DS} = 30V, I_D = 30A	-	120	-	nC
Q_{gs}	Gate Source Charge		-	37	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	33	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 30V I_D= 30A, R_{GEN} = 3Ω	-	26	-	ns
t_r	Turn-On Rise Time		-	33	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	50	-	ns
t_f	Turn-Off Fall Time		-	25	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	200	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	800	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = 30A	-	-	1.2	V

Notes:

1. Repetitive Ratin CRMGGL0603B
2. E_{AS} condition: Starting T_J=25°C, V_{DD}=30V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=56A
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Typical Performance Characteristics

Figure 1: Output Characteristics

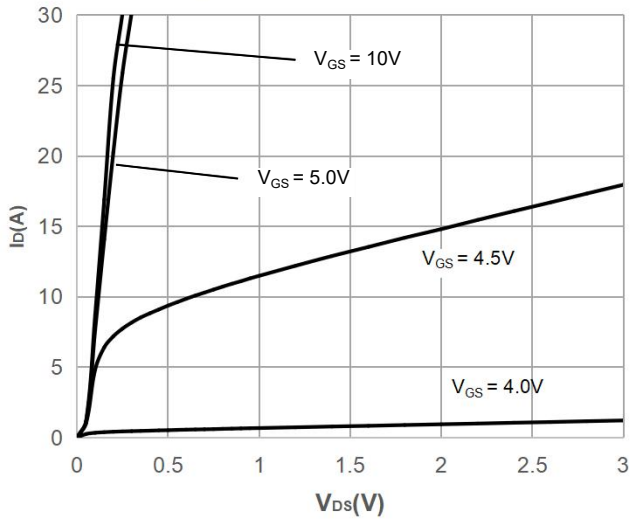


Figure 2: Typical Transfer Characteristics

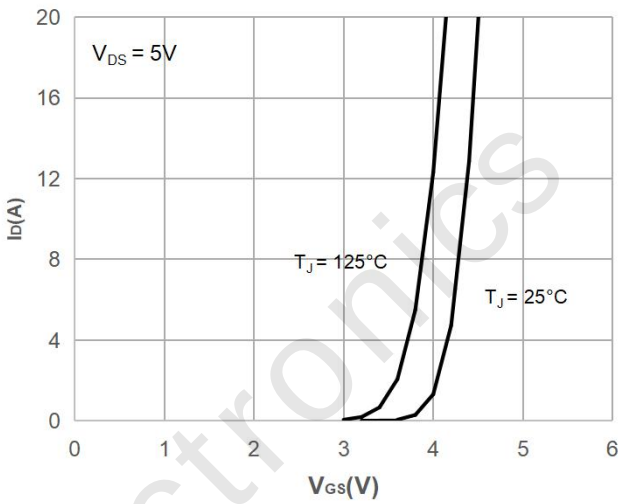


Figure 3: On-resistance vs. Drain Current

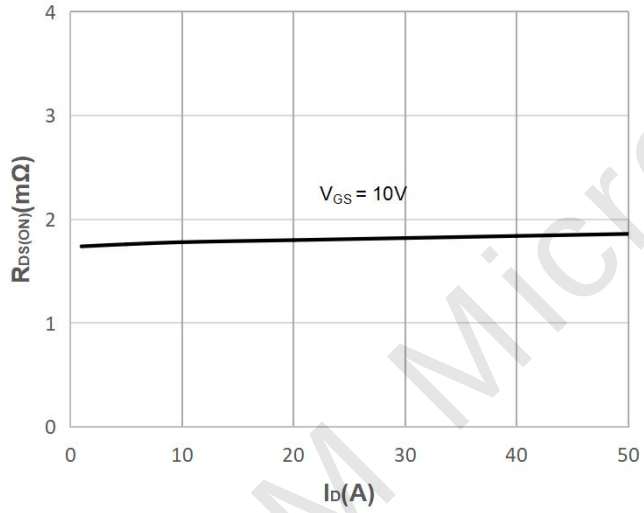


Figure 4: Body Diode Characteristics

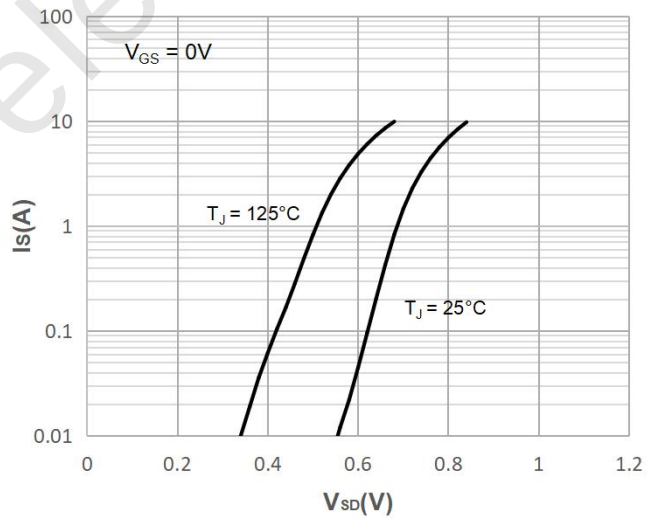


Figure 5: Gate Charge Characteristics

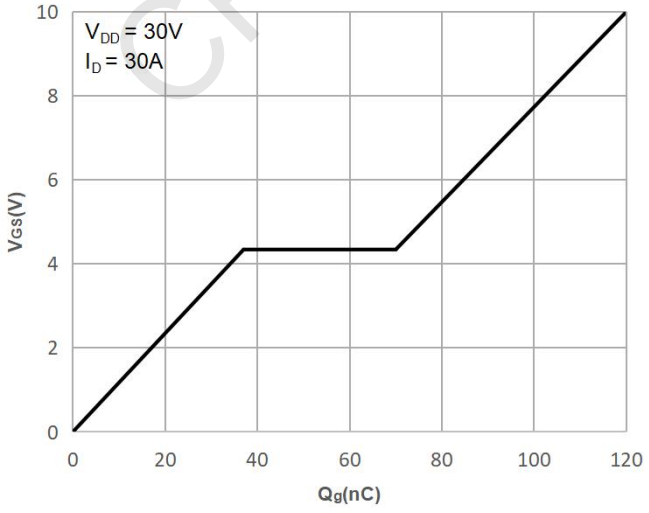
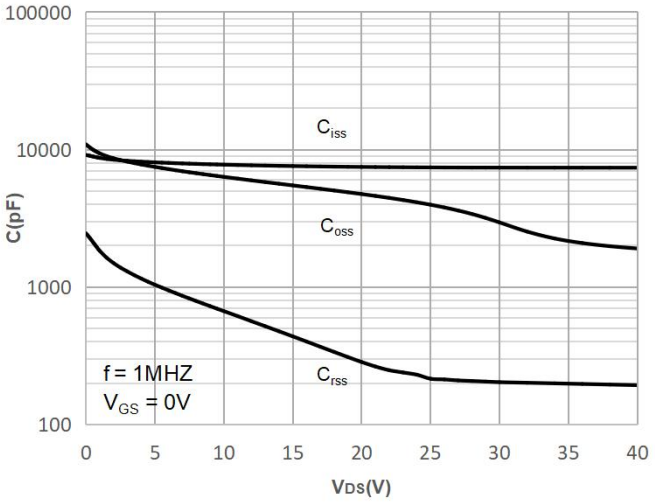


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

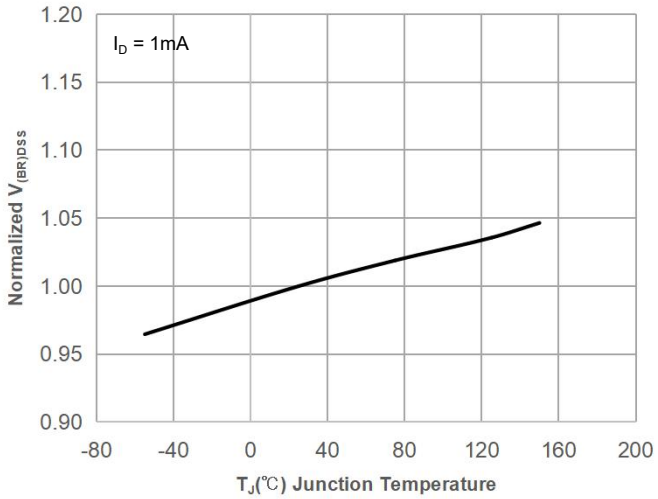


Figure 8: Normalized on Resistance vs. Junction Temperature

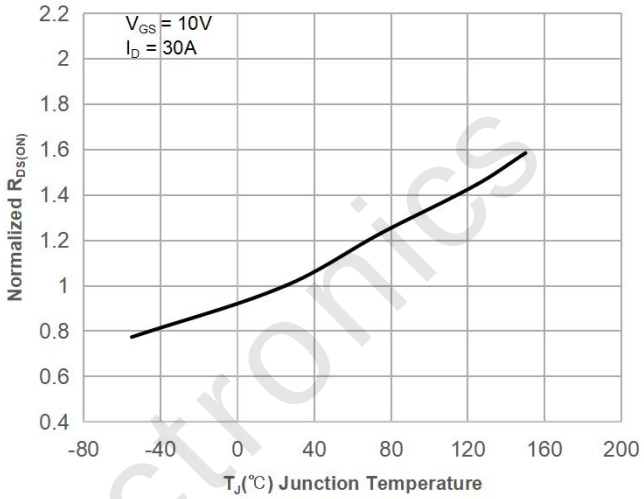


Figure 9: Maximum Safe Operating Area

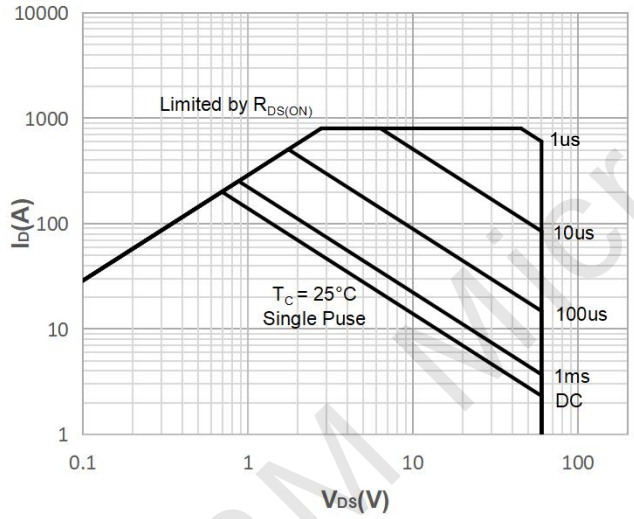


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

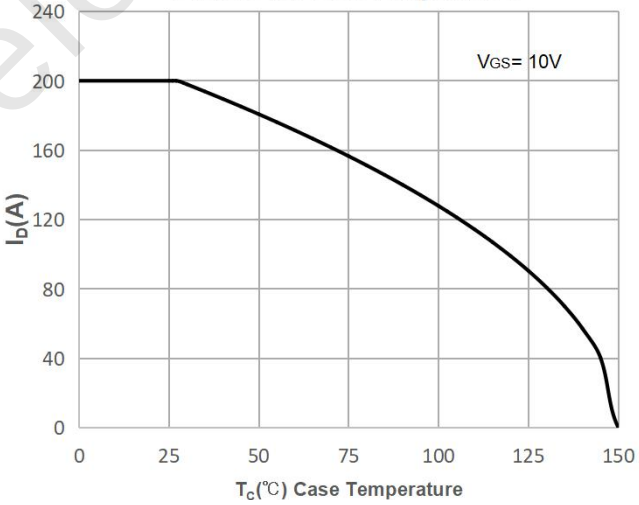


Figure 11: Normalized Maximum Transient Thermal Impedance

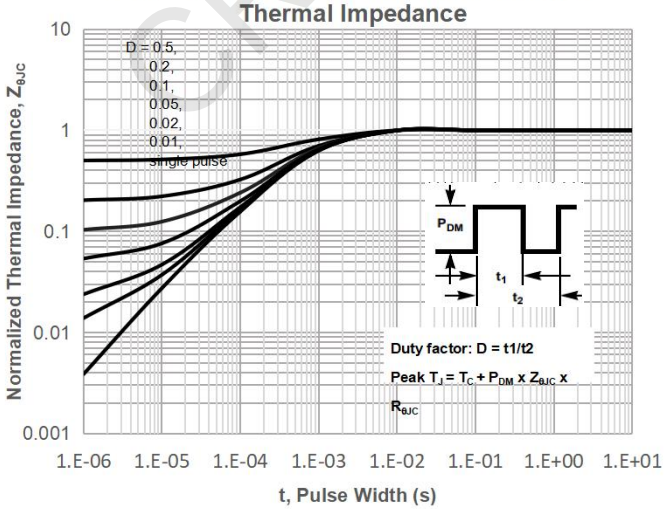
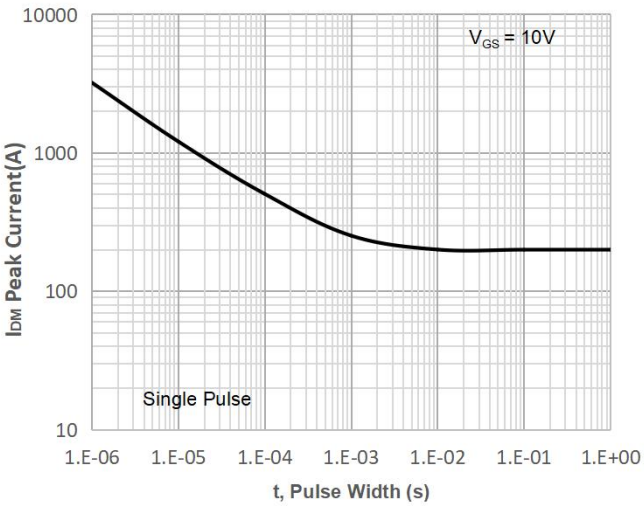


Figure 12: Peak Current Capacity



Test Circuit

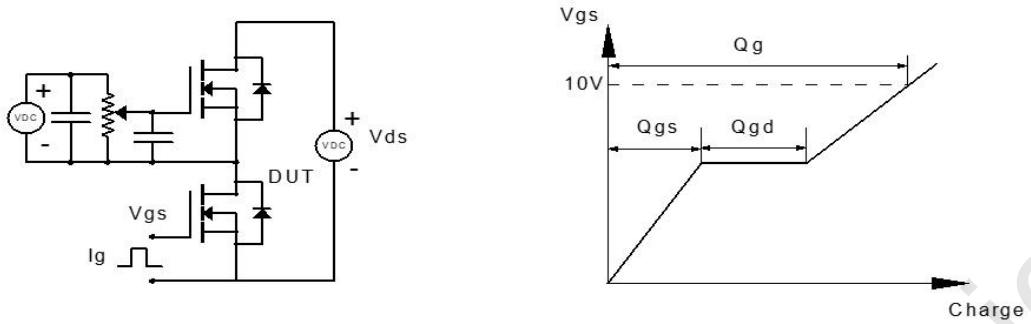


Figure 1: Gate Charge Test Circuit & Waveform

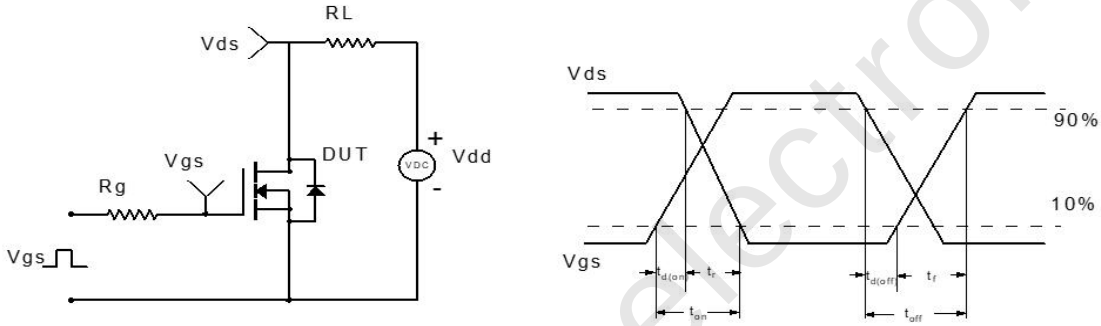


Figure 2: Resistive Switching Test Circuit & Waveform

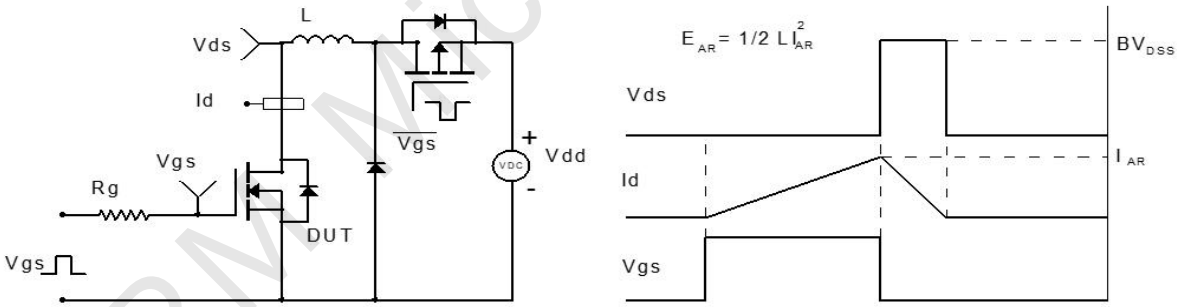


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

200

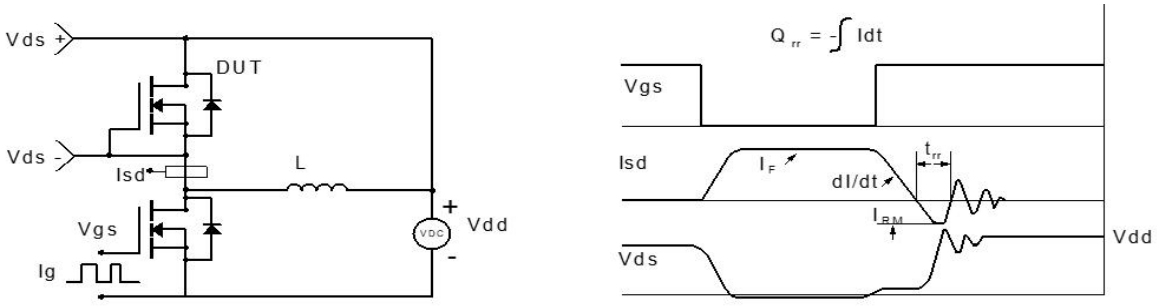
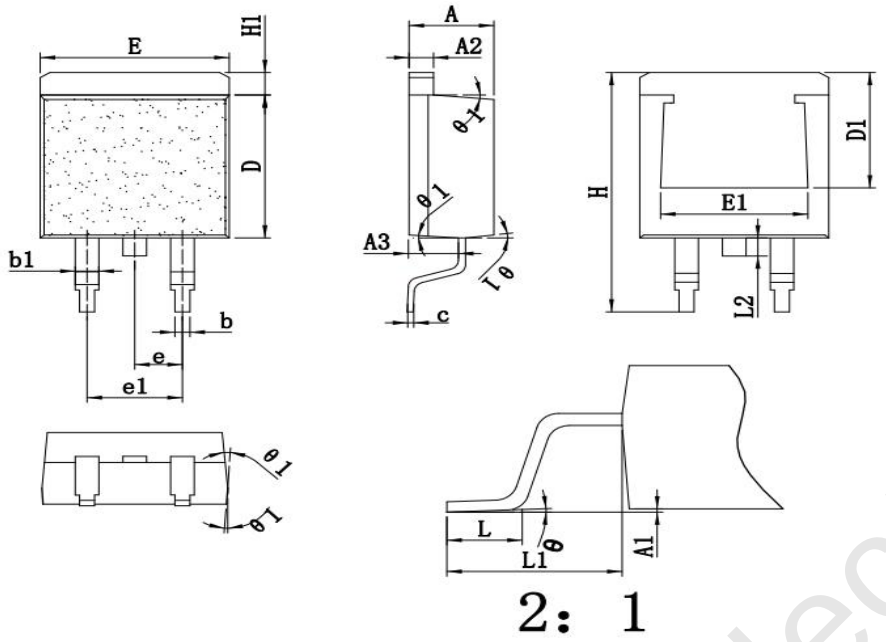


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(TO-263-3L)



SYMBOL	mm		
	MIN	NOM	MAX
✱A	4.42	4.52	4.62
✱A1	0.00	0.10	0.20
✱A2	1.24	1.27	1.32
✱A3	2.50	2.60	2.70
✱b	0.77	0.81	0.84
✱b1	1.23	1.28	1.41
✱c	0.33	0.38	0.43
✱D	8.80	8.95	9.10
D1	7.25REF		
✱E	9.92	10.07	10.22
E1	7.85REF		
✱e	2.50	2.54	2.58
e1	5.08REF		
✱H	14.80	15.10	15.30
H1	1.12	1.28	1.42
✱L	2.10	2.23	2.36
L1	4.55	4.75	4.95
L2	1.10	1.30	1.50
✱θ	0°	2°	5°
θ1	3°	–	9°

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