N Channel Enhancement

- High speed switching
- Very low switching losses
- Fully controllable dv/dt
- High blocking voltage with low on-resistance
- Fast intrinsic diode with low reverse recovery (Qrr)
- Temperature independent turn-off switching losses
- Halogen free, RoHS compliant

- Cooling effort reduction
- Efficiency improvement
- Reduced cooling requirements
- Increased power density
- Increased system switching frequency

- On-board charger/PFC
- EV battery chargers
- Booster/DC-DC converter
- Switch

(Tc = 25°C unless otherwise specified)

$V_{DS,max}$	Drain source voltage	750	V	V_{GS} = 0V, I_D = 100μA
$V_{GS,max}$	ĩ ɤq			

(Tc = 25°C unless otherwise specified)

$V_{(BR)DSS}$	Drain-source breakdown voltage	750	-	-	V	V_{GS} = 0V, I_D = 100μA	
$V_{GS(th)}$	Gate threshold voltage	2.3	3.0	3.8	V	V_{DS} = V_{GS}, I_D = 4.5mA	Fig.11
		-	2.4	-	V	V_{DS} = V_{GS}, I_D = 4.5mA T_J = 175°C	
I_{DSS}	Zero gate voltage drain current	-	1	10	μA	V_{DS} = 750V, V_{GS} = 0V	
I_{GSS}	Gate source leakage current	-	-	100	nA	V_{GS} = 18V, V_{DS} = 0V	
$R_{DS(on)}$	Current drain-source on-state resistance	-	71	98	mΩ	V_{GS} = 15V, I_D = 14A	Fig.4,5,6
		-	94	-		V_{GS} = 15V, I_D = 14A, T_J = 175°C	
		-	60	78		V_{GS} = 18V, I_D = 14A	
		-	89	-		V_{GS} = 18V, I_D = 14A, T_J = 175°C	
g_{fs}	Transconductance	-	10	-	S	V_{DS} = 20V, I_D = 14A	Fig.7
		-	9	-		V_{DS} = 20V, I_D = 14A, T_J = 175°C	
$R_{g,int}$	Internal gate resistance	-	4.5	-	Ω	V_{AC} = 25mV, f = 1MHz, open drain	

(Tc = 25°C unless otherwise specified)

C_{iss}	Input capacitance	-	860	-	pF	V_{DS} = 500V, V_{GS} = 0V T_J = 25°C, V_{AC} = 25mV f = 100kHz	Fig.17, 18
C_{oss}	Output capacitance	-	90	-			
C_{rss}	Reverse capacitance	-	5.3	-			
E_{oss}	Coss stored energy	-	13	-	μJ		Fig.16

Q_{gs}	Gate source charge	-	8.5	-	nC	V_{DS} = 50 I_D = 14A	.12
Q_{gd}	Gate drain charge	-	8	-			
Q_g	Gate charge	-	24	-			

(Tc = 25°C unless otherwise specified)

E_{on}	Turn on switching energy	-	63	-	µJ	V_{DS} = 50 I_D = 14A L = 120µ	g.26
E_{off}	Turn off switching energy	-	33	-			
$t_{d\ on}$	Turn on delay time	-	10	-	ns		g.27
t_r	Rise time	-	18	-			
$t_{d\ off}$	Turn off delay time	-	11	-			
t_f	Fall time	-	11	-			

V_{SD}	Diode forward voltage	-	3.7	-	V	V_{GS} = -4	8,9, 0
		-	3.2	-	V	V_{GS} = -4 T_J = 175	
I_S	Continuous diode forward current	-	47	-	A	V_{GS} = -4	te2
t_{rr}	Reverse recovery time	-	21	-	ns	V_R	

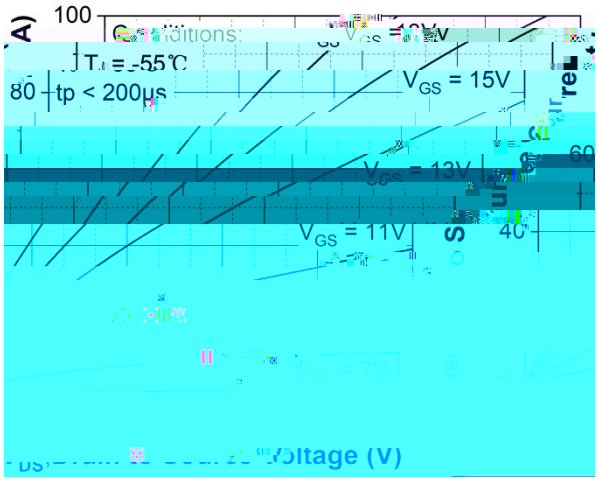


Figure 1. Output characteristics T_J = -55 ºC

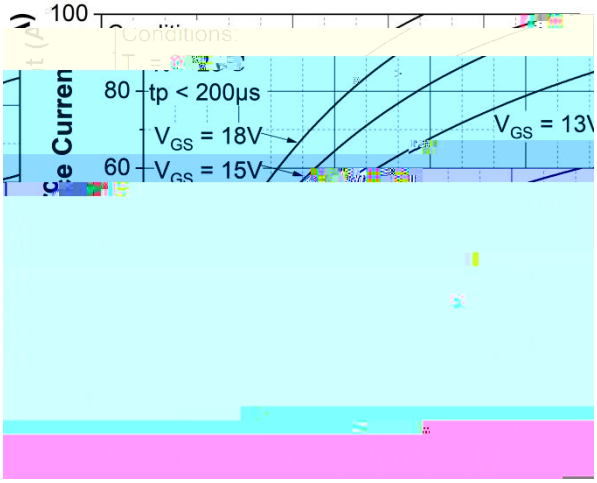


Figure 2. Output characteristics T_J = 25 ºC

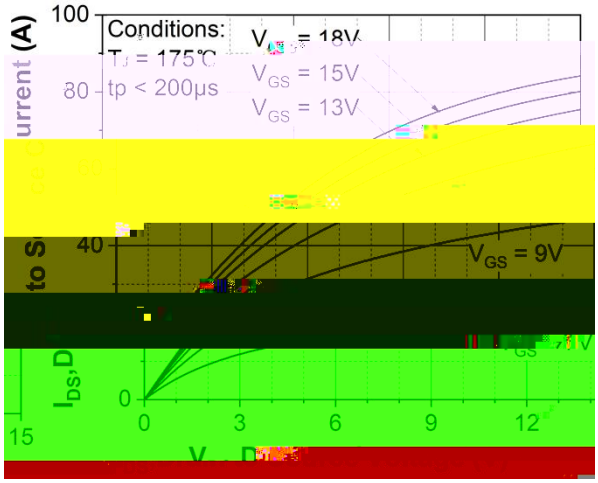


Figure 3. Output characteristics T_J = 175 ºC

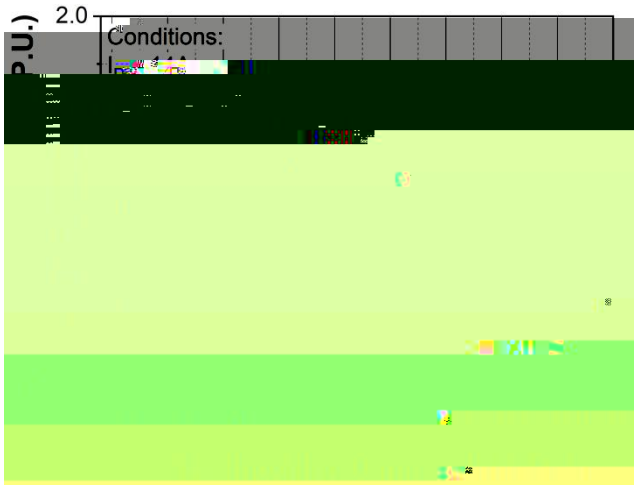


Figure 4. Normalized on-resistance vs. temperature

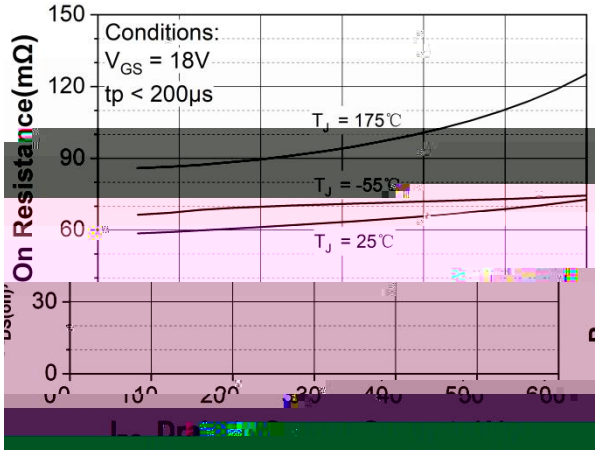


Figure 5. On-resistance vs. drain current for various temperatures

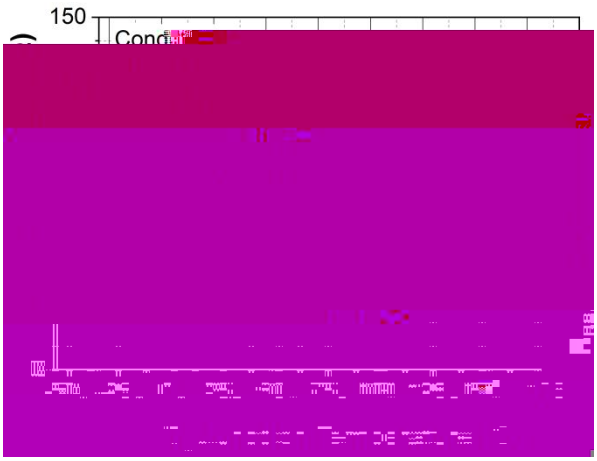


Figure 6. On-resistance vs. temperature for various gate voltages

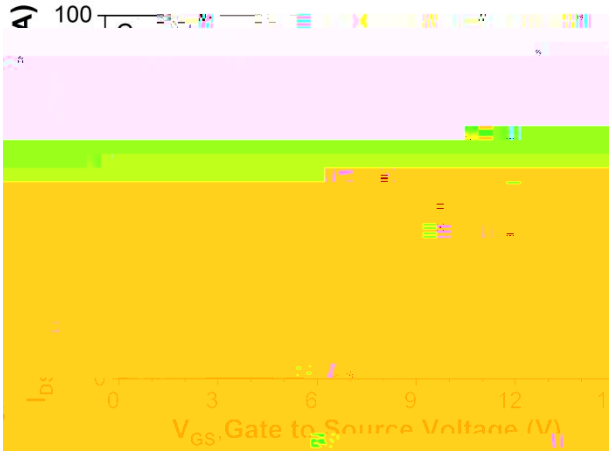


Figure 7. Transfer characteristic for various junction temperatures

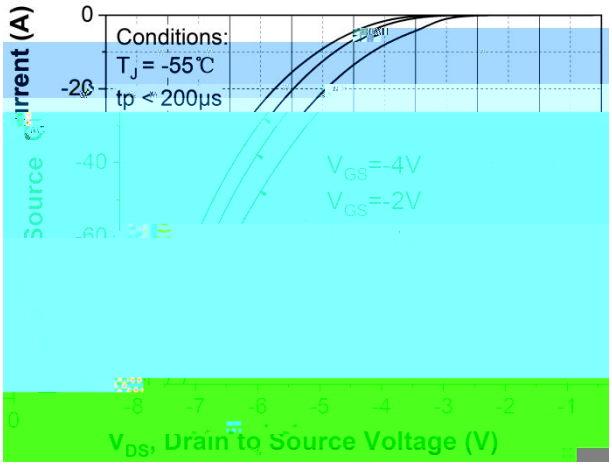


Figure 8. Body diode characteristic at T_J = -55 ºC

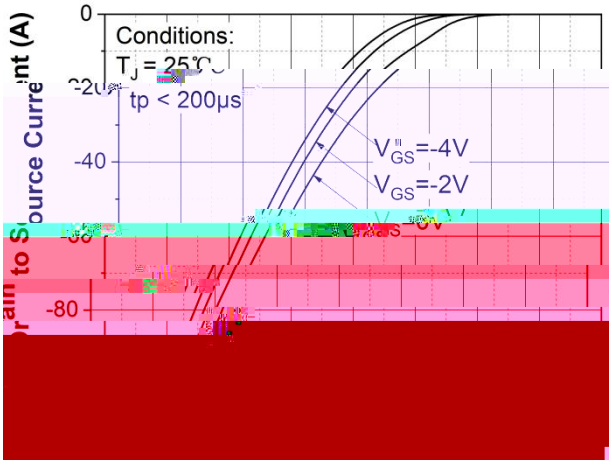


Figure 9. Body diode characteristic at T_J = 25 ºC

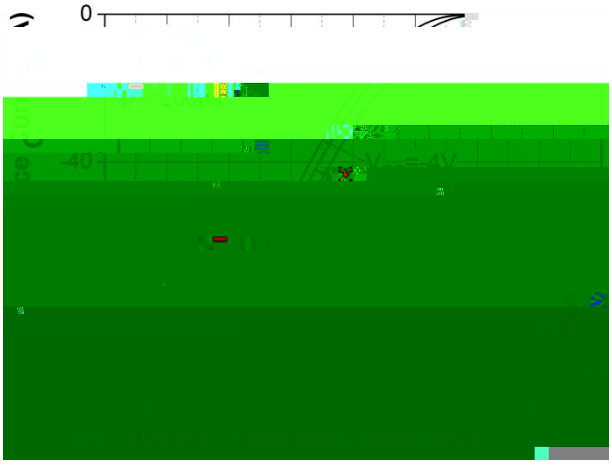


Figure 10. Body diode characteristic at T_J = 175ºC

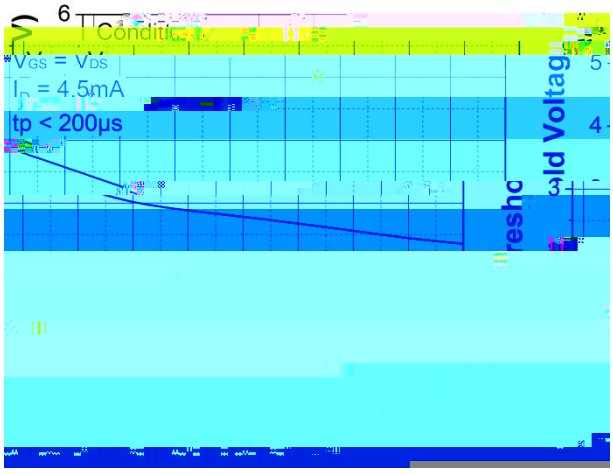


Figure 11. Threshold voltage vs. temperature

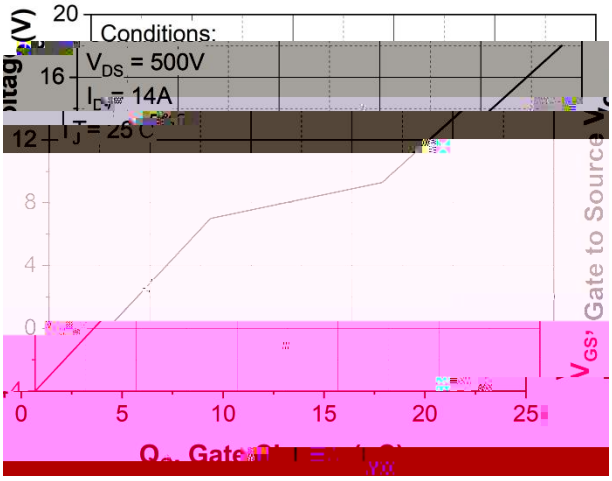


Figure 12. Gate charge characteristic

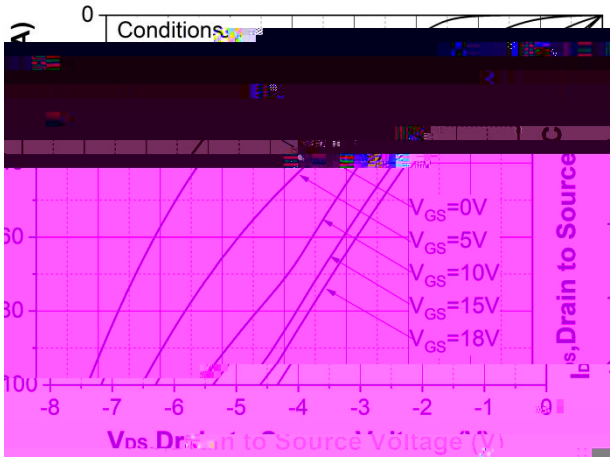


Figure 13. 3rd quadrant characteristic at T_J = -55 ºC

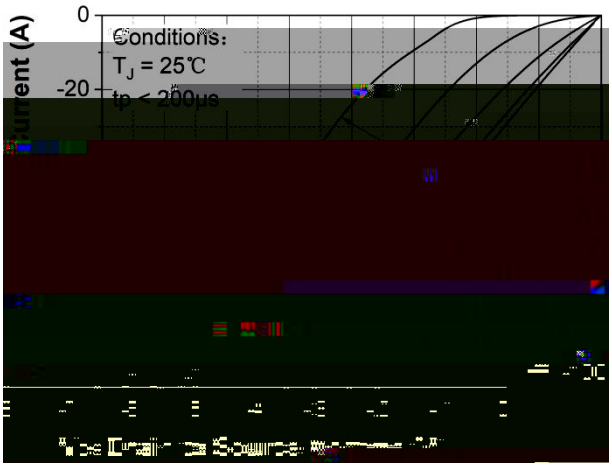


Figure 14. 3rd quadrant characteristic at T_J = 25 ºC

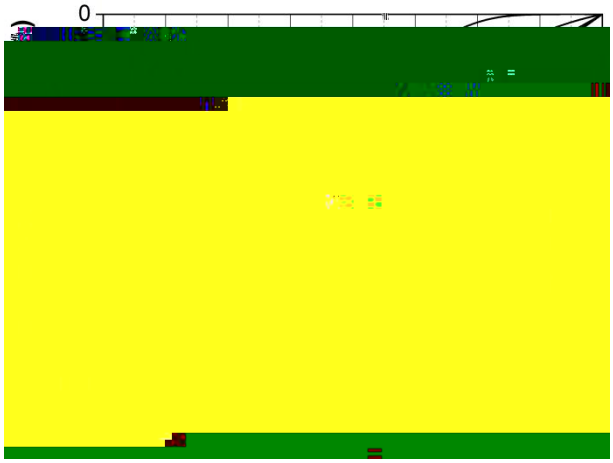


Figure 15. 3rd quadrant characteristic at T_J = 175 ºC

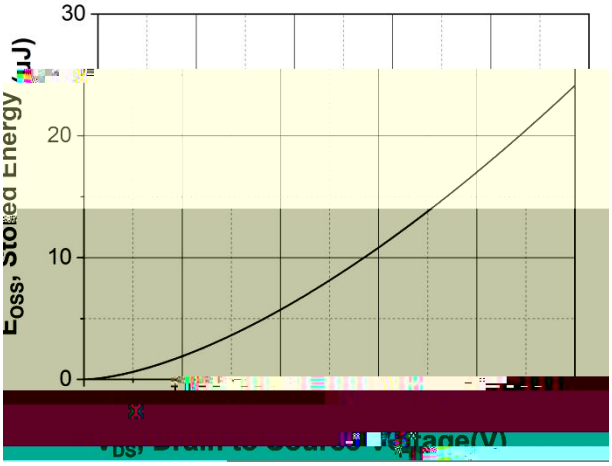


Figure 16. Output capacitor stored energy

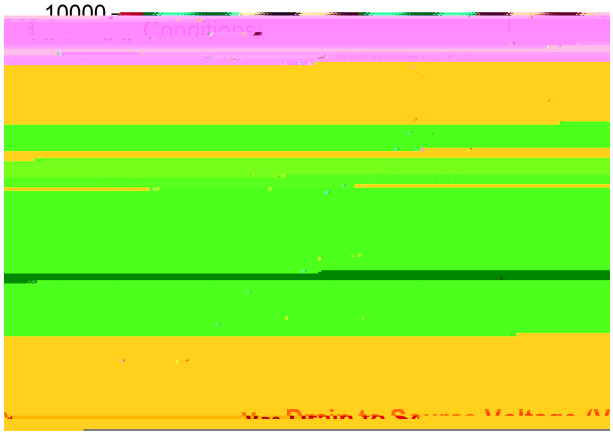


Figure 17. Capacitances vs. drain-source voltage (0 - 200V)

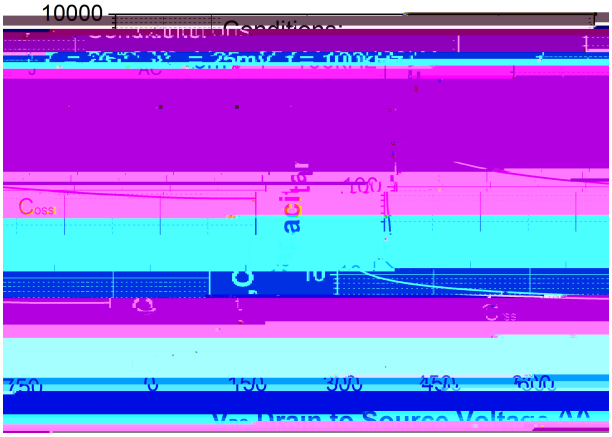


Figure 18. Capacitances vs. drain-source voltage (0 - 750V)

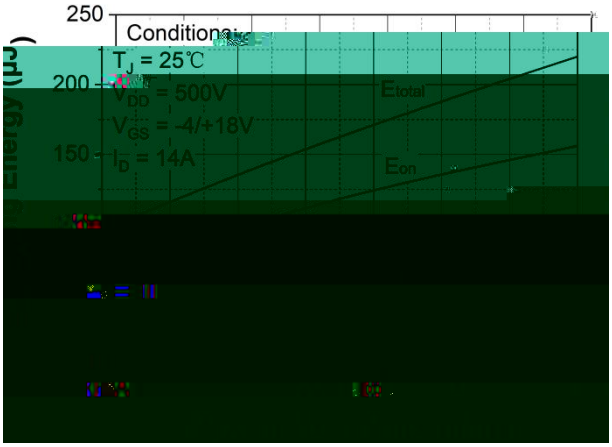


Figure 25. Clamped inductive switching energy vs. R_G (ext)



Figure 26. Clamped inductive switching energy vs. temperature

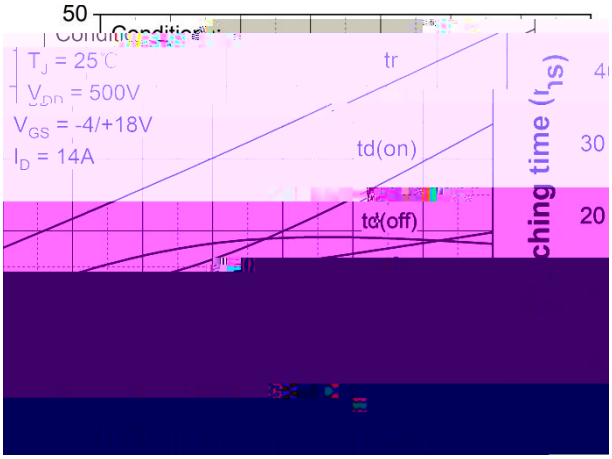
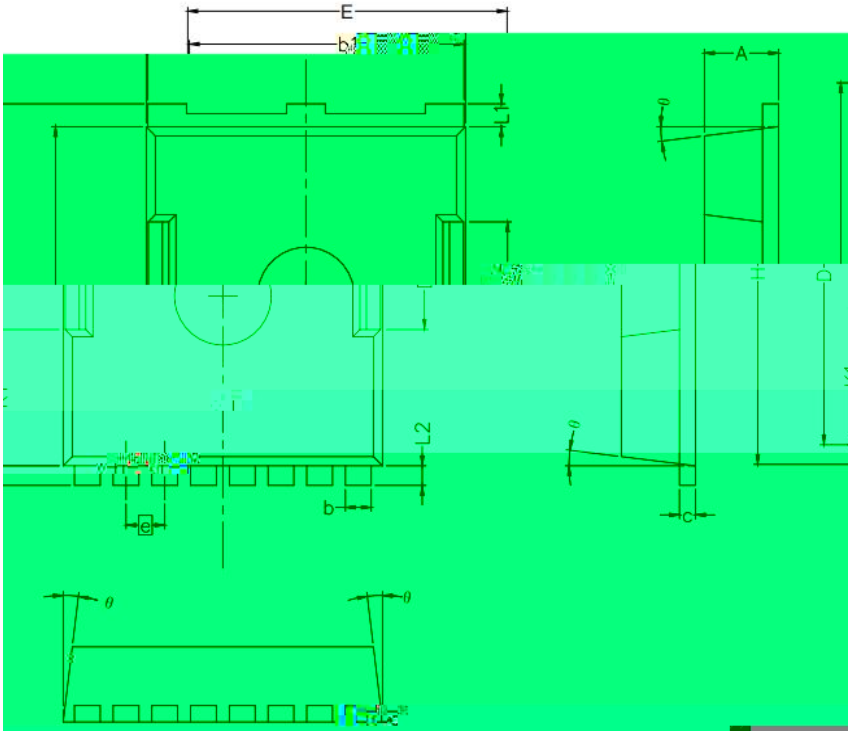
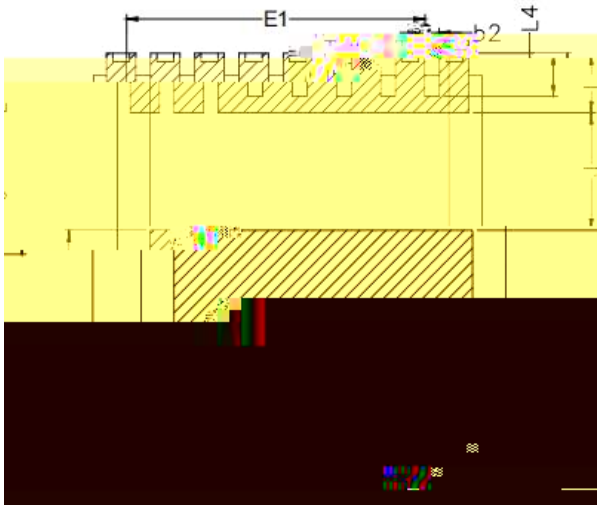


Figure 27. Switching times vs. R_G (ext)

(TOLL-8L)





SYMBOL	DIMENSIONS MILLIMETERS	
	MIN	MAX
A	2.20	2.40
b	0.70	0.90
b1	9.70	9.90
b2	0.42	0.60
c	0.40	0.60
D	10.28	10.58
D2	3.10	3.50
E	9.70	10.10
E1	7.90	8.30
e	1.20 BSC	
H	11.48	11.88
H1	6.75	7.15
N	8	
J	3.00	3.30
K1	3.98	4.38
L	1.40	1.80
L1	0.6	
L4		
θ	4°	10°

7. Except as otherwise explicitly approved by Sichain in a written document signed by authorized representatives of Sichain, Sichain' products may not be used in any applications where a failure of the product or any consequences of the use thereof can reasonably be expected to result in personal injury.

8. For use of our products in applications requiring a high degree of reliability (as exemplified below), please contact and consult with a Sichain representatives, for example but not limited to: transportation equipment,primary communication equipment,traffic lights,fire/crime prevention, safety equipment, medical systems, and power transmission systems.