
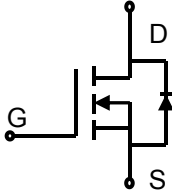


Lonten N-channel 70V, 65A, 8.2mΩ Power MOSFET

<p>Description These N-Channel enhancement mode power field effect transistors are using shielded gate trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and with stand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.</p> <p>Features</p> <ul style="list-style-type: none"> ◆ 70V,65A,$R_{DS(on).max}=8.2m\Omega@V_{GS} = 10V$ ◆ Improved dv/dt capability ◆ Fast switching ◆ 100% EAS Guaranteed ◆ Green device available <p>Applications</p> <ul style="list-style-type: none"> ◆ Motor Drives ◆ UPS ◆ DC-DC Converter 	<p>Product Summary</p> <table> <tr> <td>V_{DSS}</td> <td>70V</td> </tr> <tr> <td>$R_{DS(on).max}@V_{GS}=10V$</td> <td>8.2mΩ</td> </tr> <tr> <td>I_D</td> <td>65A</td> </tr> </table> <p>Pin Configuration</p>  <p>TO-252</p>  <p style="text-align: center;">N-Channel MOSFET</p>	V_{DSS}	70V	$R_{DS(on).max}@V_{GS}=10V$	8.2mΩ	I_D	65A
V_{DSS}	70V						
$R_{DS(on).max}@V_{GS}=10V$	8.2mΩ						
I_D	65A						

Absolute Maximum Ratings $T_C = 25^\circ C$ unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	70	V
Continuous drain current ($T_C = 25^\circ C$) ($T_C = 100^\circ C$)	I_D	65	A
		41	A
Pulsed drain current ¹⁾	I_{DM}	260	A
Gate-Source voltage	V_{GSS}	± 20	V
Avalanche energy ²⁾	E_{AS}	96	mJ
Power Dissipation	P_D	59.5	W
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ C$
Operating Junction Temperature Range	T_J	-55 to +150	$^\circ C$

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.1	$^\circ C/W$
Thermal Resistance, Junction-to-Ambient ³⁾	$R_{\theta JA}$	125	$^\circ C/W$

Package Marking and Ordering Information

Device	Device Package	Marking	Units/Reel
LSGG07R082WE	TO-252	G07R082WE	2500

Electrical Characteristics

T_J = 25°C unless otherwise noted

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} =0 V, I _D =250uA	70	---	---	V
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250uA	2.0	---	4.0	V
Drain-source leakage current	I _{DSS}	V _{DS} =70 V, V _{GS} =0 V, T _J = 25°C	---	---	1	μA
		V _{DS} =70V, V _{GS} =0 V, T _J = 150°C	---	---	10	mA
Gate leakage current, Forward	I _{GSSF}	V _{GS} =20 V, V _{DS} =0 V	---	---	100	nA
Gate leakage current, Reverse	I _{GSSR}	V _{GS} =-20V, V _{DS} =0 V	---	---	-100	nA
Drain-source on-state resistance	R _{DS(on)}	V _{GS} =10 V, I _D =40 A, T _J = 25°C	---	7.2	8.2	mΩ
		T _J = 150°C	---	12.2	---	
Forward transconductance	g _{fs}	V _{DS} =5V , I _D =40A	---	40	---	S
Dynamic characteristics						
Input capacitance	C _{iss}	V _{DS} = 35V, V _{GS} = 0 V, f = 250kHz	---	1424	---	pF
Output capacitance	C _{oss}		---	537	---	
Reverse transfer capacitance	C _{rss}		---	41	---	
Turn-on delay time	t _{d(on)}	V _{DD} = 35V, V _{GS} =15V, I _D =40 A	---	16	---	ns
Rise time	t _r		---	19	---	
Turn-off delay time	t _{d(off)}		---	38.4	---	
Fall time	t _f		---	21.6	---	
Gate resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz	---	2.0	---	Ω
Gate charge characteristics						
Gate to source charge	Q _{gs}	V _{DS} =56 V, I _D =40A, V _{GS} = 10 V	---	7	---	nC
Gate to drain charge	Q _{gd}		---	10.9	---	
Gate charge total	Q _g		---	28.6	---	
Gate plateau voltage	V _{plateau}		---	5	---	V
Output Charge	Q _{oss}	V _{DS} =56 V, V _{GS} = 0V	---	41	---	nC
Drain-Source diode characteristics and Maximum Ratings						
Continuous Source Current	I _S		---	---	49.5	A
Pulsed Source Current	I _{SM}		---	---	198	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =40A, T _J =25°C	---	---	1.2	V
Reverse Recovery Time	t _{rr}	I _S =40A, di/dt=100A/us, T _J =25°C	---	54	---	ns
Reverse Recovery Charge	Q _{rr}		---	49.7	---	nC

Notes:

- 1: Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2: V_{DD}=56V, V_{GS}=10V, L=0.5mH, I_{AS}=19.6A, R_G=25Ω, Starting T_J=25°C.
- 3: The value of R_{thJA} is measured by placing the device in a still air box which is one cubic foot.

Electrical Characteristics Diagrams

Figure 1. Typ. Output Characteristics

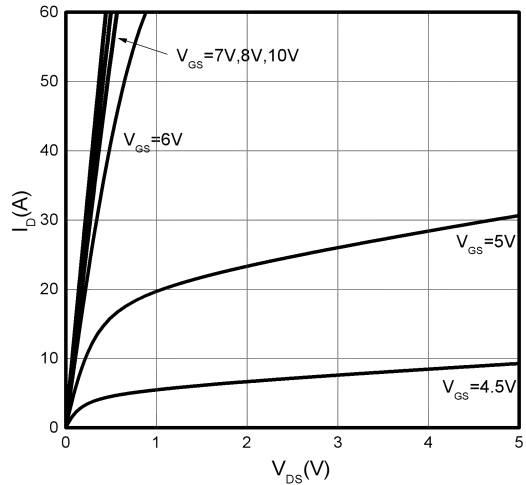


Figure 2. Transfer Characteristics

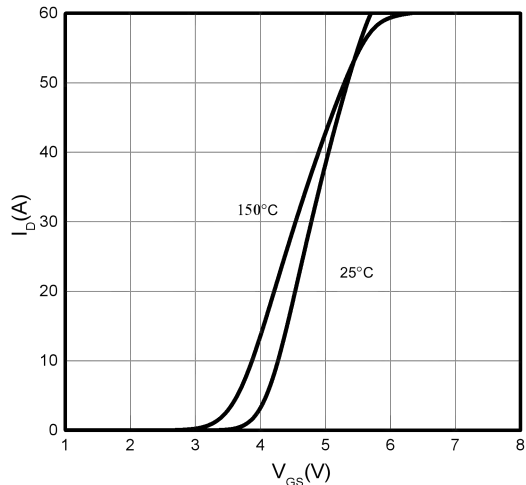


Figure 3. On-Resistance vs. Drain Current

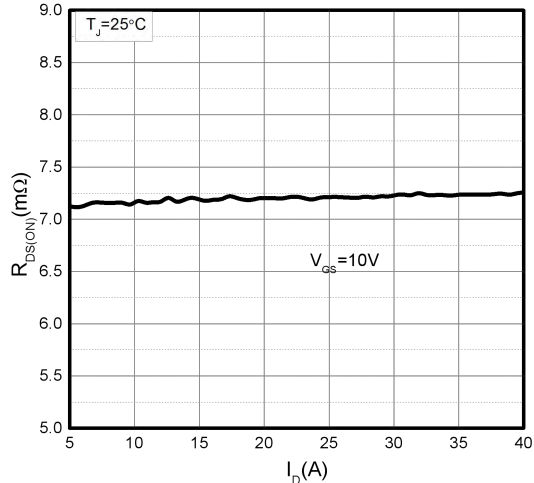


Figure 4. On-Resistance vs. Temperature

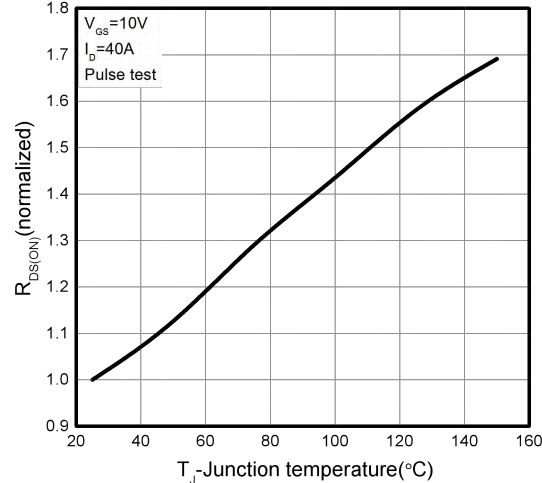


Figure 5. Breakdown Voltage vs. Temperature

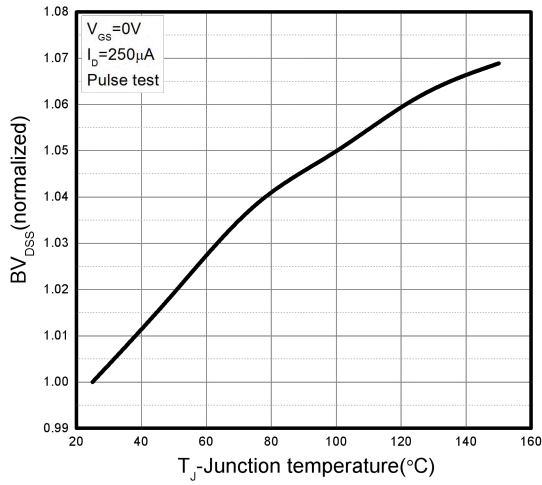


Figure 6. Threshold Voltage vs. Temperature

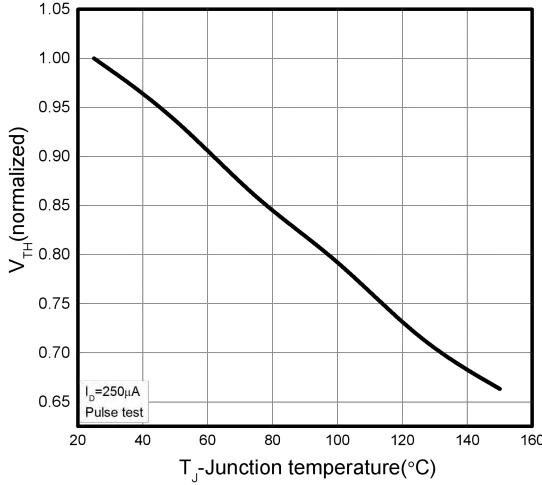


Figure 7. R_{DS(on)} vs. Gate Voltage

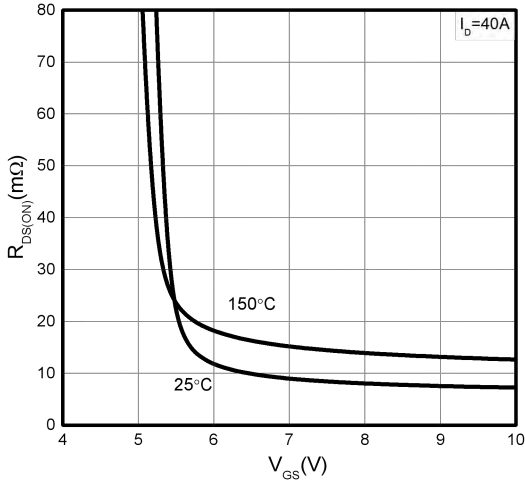


Figure 8. Body-Diode Characteristics

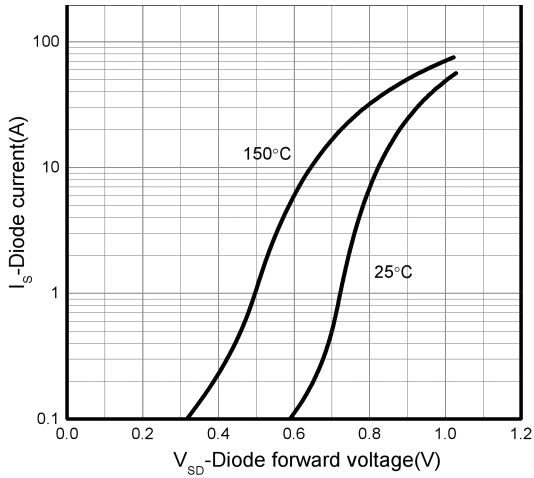


Figure 9. Capacitance Characteristics

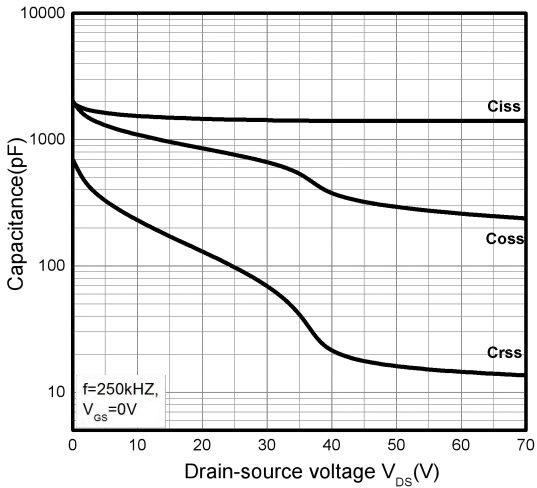


Figure 10. Gate Charge Characteristics

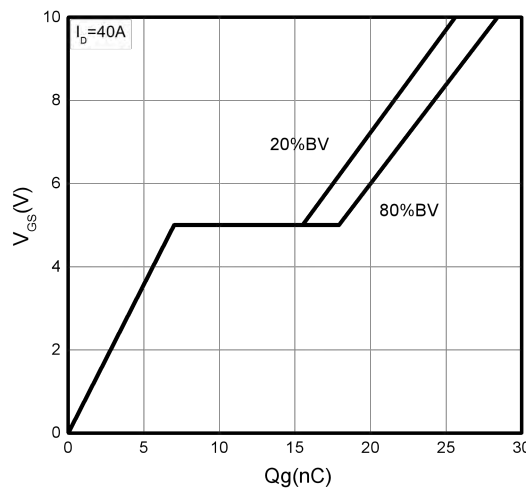


Figure 11. Drain Current Derating

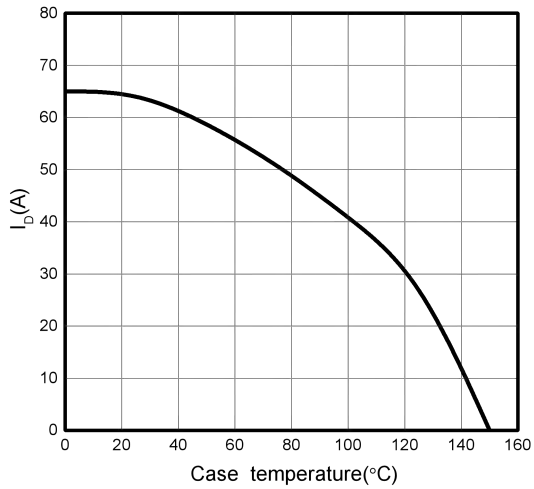


Figure 12. Power Dissipation vs. Temperature

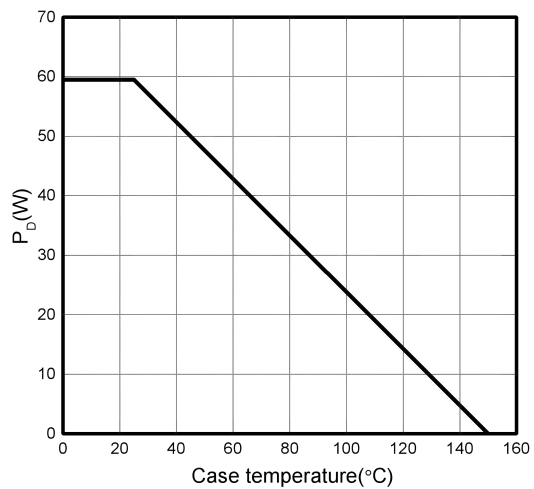


Figure 13: Safe Operating Area

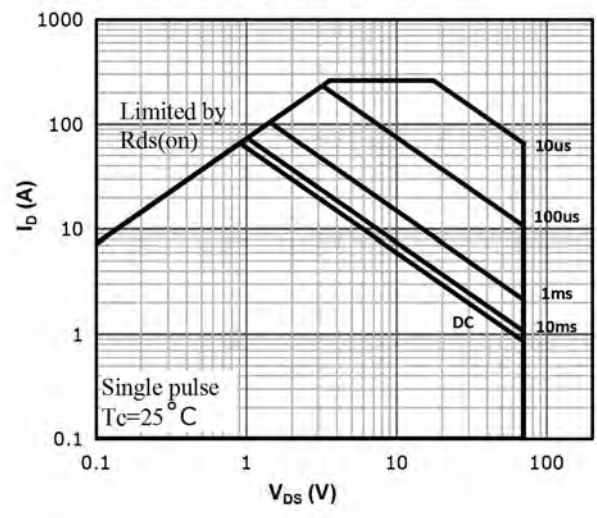
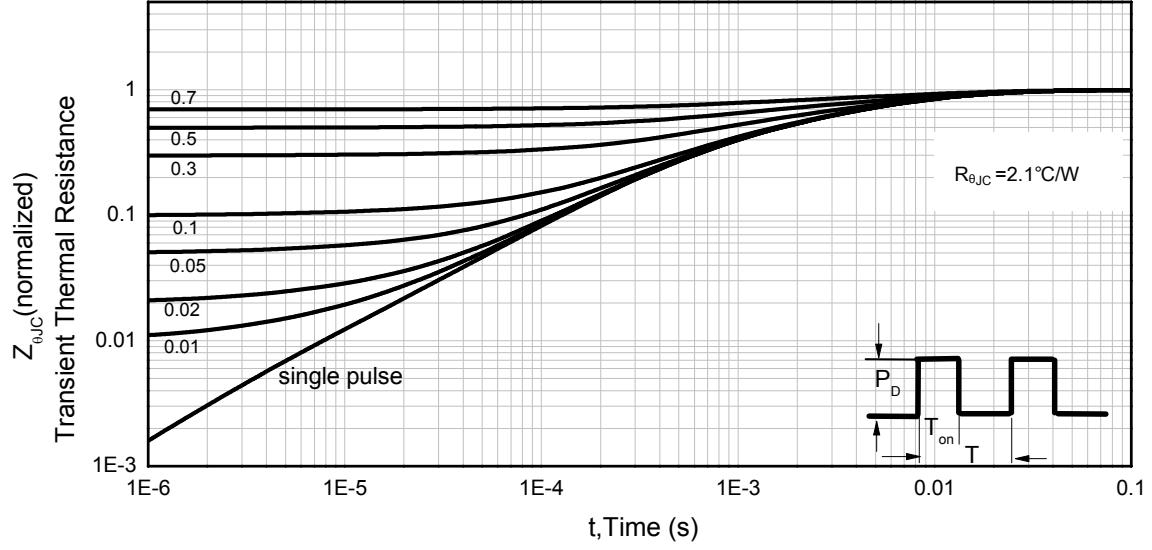
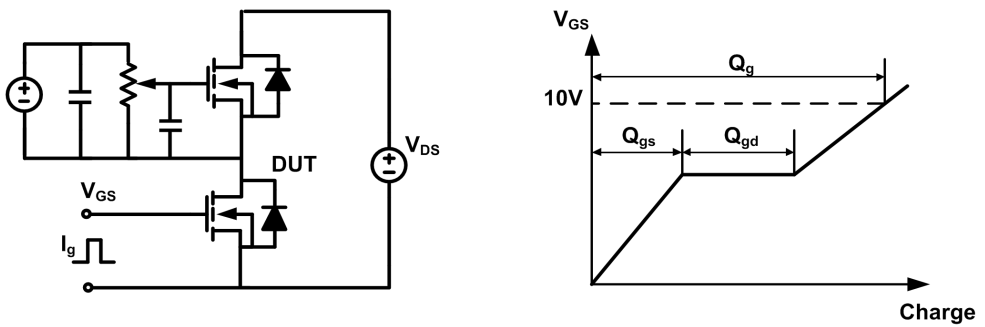


Figure 14. Normalized Maximum Transient Thermal Impedance (R_{thJC})

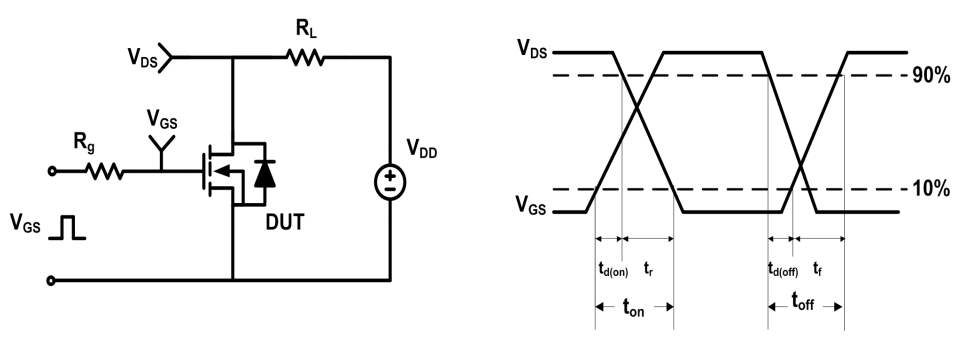


Test Circuit & Waveforms

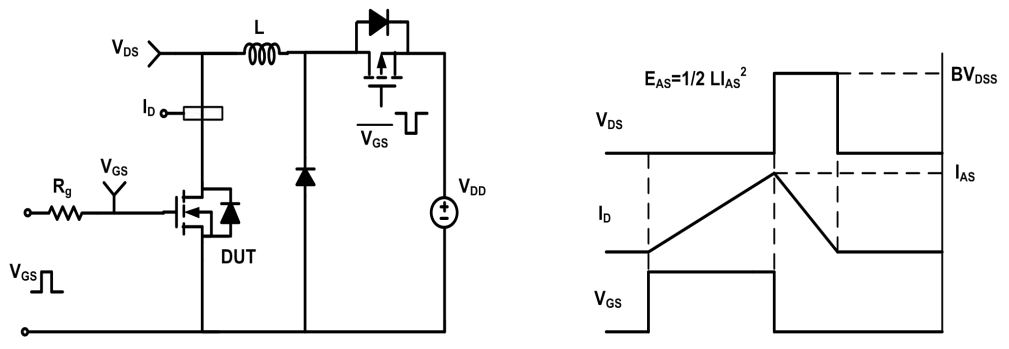
Gate Charge Test Circuit & Waveform



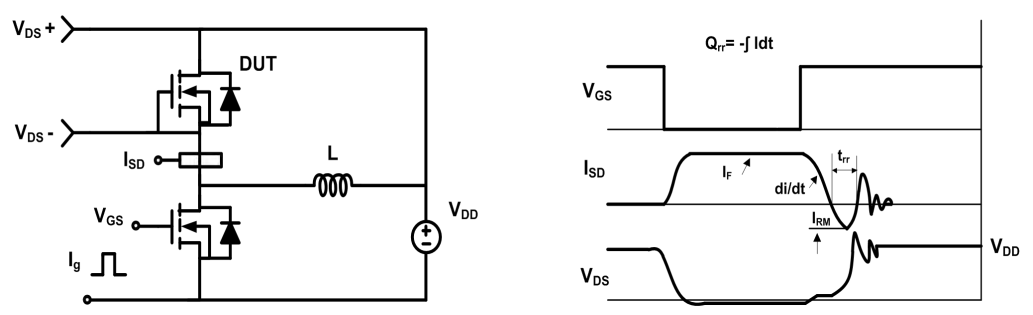
Resistive Switching Test Circuit & Waveform



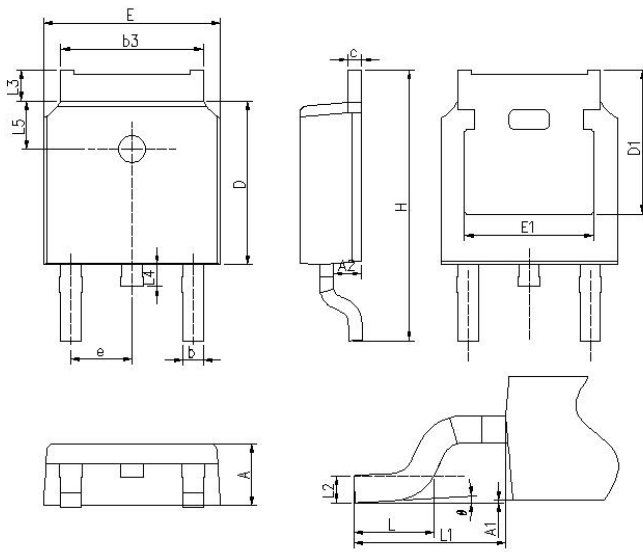
Unclamped Inductive Switching (UIS) Test Circuit & Waveform



Diode Recovery Test Circuit & Waveform



Mechanical Dimensions for TO-252



DIMENSIONS IN MILLIMETERS		
SYMBOL	MIN	MAX
A	2.18	2.4
A1	-	0.2
A2	0.9	1.17
b	0.65	0.9
b3	4.95	5.5
c	0.43	0.89
D	5.97	6.22
D1	5.21	-
E	6.35	6.8
E1	4.32	-
e	2.286BSC	
H	9.4	10.5
L	0.38	1.78
L1	2.90BSC	
L2	0.51BSC	
L3	0.88	1.28
L4	-	1.02
L5	1.65	1.95
θ	0°	10°