

**•General Description**

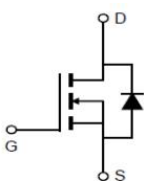

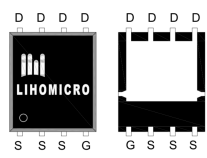
The SJ MOSFET LH65R360 has the low  $R_{DS(on)}$ , low gate charge, fast switching and excellent avalanche characteristics. This device offers extremely fast and robust body diode, and is suitable for telecom and power supplies.

**•Features**

- Much lower  $R_{on} \cdot A$  performance for On-state efficiency
- Much lower FOM for fast switching efficiency

**•Application**

- LED/LCD/PDP TV and monitor Lighting
- Solar/Renewable/UPS-Micro Inverter System
- Power Supplies

	<b>VDS = 650V</b>  <b><math>R_{DS(ON)} = 310m\Omega</math></b>  <b>ID = 11A</b>
 <p>TO-263</p>	<p>■ RoHS COMPLIANT</p>  <p>DFN5*6</p>

**•Ordering Information:**

Part number	LH65R360	LH65R360
Package	TO-263	DFN5*6
Basic ordering unit (pcs)	800	5000
Normal Package Material Ordering Code	LH65R360T63-TO263-TAP	LH65R360N-DFN5*6-TAP
Halogen Free Ordering Code	LH65R360T63-TO263-TAP-HF	LH65R360N-DFN5*6-TAP-HF

**•Absolute Maximum Ratings (TC = 25°C)**

PARAMETER	SYMBOL	Value	UNIT
Drain-Source Breakdown Voltage	$BV_{DSS}$	650	V
Gate-Source Voltage	$V_{GS}$	$\pm 30$	V
Continuous Drain Current	$I_D$	11	A
	TC = 100°C	6.6	
Pulsed drain current (TC = 25°C, tp limited by Tjmax) <sup>1</sup>	$I_D$ pulse	33	A
Single Pulse Avalanche Energy	$E_{AR}$	1.8	A
Single Pulse Avalanche Energy <sup>2</sup>	$E_{AS}$	215	mJ
Repetitive Avalanche Energy <sup>2</sup>	$E_{AR}$	0.32	mJ
Power Dissipation(TC=25°C)	$P_D$	82	W
Operating Temperature and Storage Temperature Range	$T_J/T_{STG}$	-55~+150	°C
Reverse diode dv/dt <sup>3</sup>	dv/dt	15	V/ns
Maximum diode commutation speed <sup>3</sup>	di <sub>f</sub> /dt	500	V/ns

**●Electronic Characteristics**

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	650	--	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5	--	4.5	V
Drain-source On Resistance <sup>3</sup>	$R_{DS(ON)}$	$V_{GS}=10V, I_D=5.5A$	--	0.31	0.36	$\Omega$
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=650V, V_{GS}=0V, T_J=25^\circ C$	--	--	1	$\mu A$
		$V_{DS}=650V, V_{GS}=0V, T_J=125^\circ C$	--	--	100	
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 30$	--	--	$\pm 100$	nA
Forward Transconductance <sup>3</sup>	$R_G$	f=1.0MHz open drain	--	--	18	$\Omega$
Input Capacitance	$C_{iss}$	$V_{GS}=0V,$ $V_{DS}=100V$ f = 1.0MHz	--	808	--	pF
Output Capacitance	$C_{oss}$		--	33	--	
Reverse transfer Capacitance	$C_{rss}$		--	2.0	--	
Turn -Off Delay Time	$T_d(off)$	$V_{DD}=400V,$ $I_D=11.0A$ $R_G=25\Omega$	--	145	--	ns
Turn-on delay time	$T_d(on)$		--	70	--	
Rise time	$T_r$		--	70	--	
Fall time	$T_f$		--	59	--	
Total Gate Charge	$Q_g$	$I_D=11A,$ $V_{DS}=520V$ $V_{GS}=10V$	--	22	---	nC
Gate-to-Source Charge	$Q_{gs}$		--	4	--	
Gate-to-Drain Charge	$Q_{gd}$		--	8	---	
Continuous Diode Forward Current	$I_s$		--	--	11	A
Pulsed Diode Forward Current <sup>1</sup>	$I_{SM}$		--	--	33	A
Diode Forward Voltage	$V_{SD}$	$T_J=25^\circ C, I_s=5.5A$ $V_{GS}=0V$	--	0.9	1.2	V
Reverse Recovery Time	trr	$V_{RR}=400V,$ If=Is diF/dt=100A/ $\mu s$	--	377	--	ns
Reverse Recovery Charge	Qrr		--	3.4	--	$\mu C$
Peak Reverse Recovery Current	$I_{RRM}$		--	17.8	--	A

**●Thermal Characteristics**

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-case	$R_{thJC}$	1.51	$^\circ C/W$
Thermal Resistance Junction-ambient	$R_{thJA}$	62	$^\circ C/W$

Notes:

1.Repetitive Rating: Pulse width limited by maximum junction temperature.

2.  $I_{AS}=1.8A, V_{DD}=50V, R_G=25\Omega$ , Starting  $T_J=25^\circ C$ 

3. Pulse Test : Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$

• Typical Characteristics  $T_J=25^\circ\text{C}$ , unless otherwise noted

Figure 1. Output Characteristics

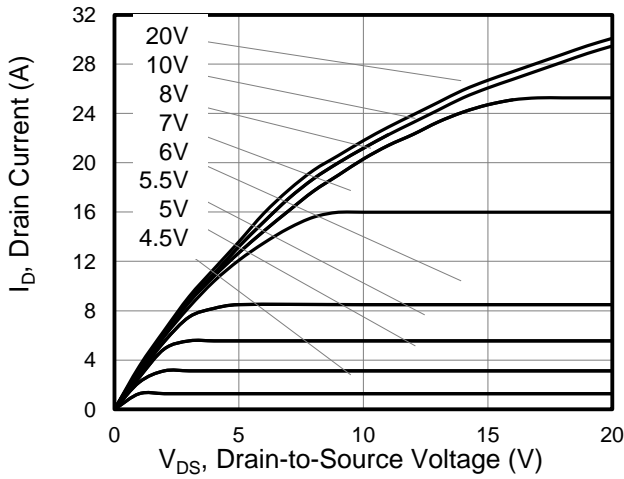


Figure 2. Transfer Characteristics

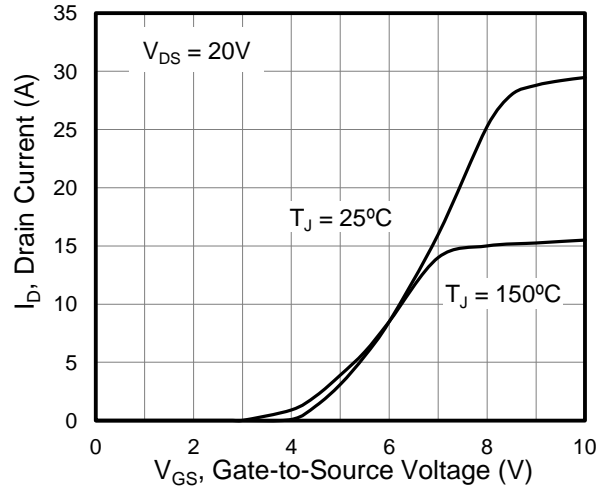


Figure 3. On-Resistance vs. Drain Current

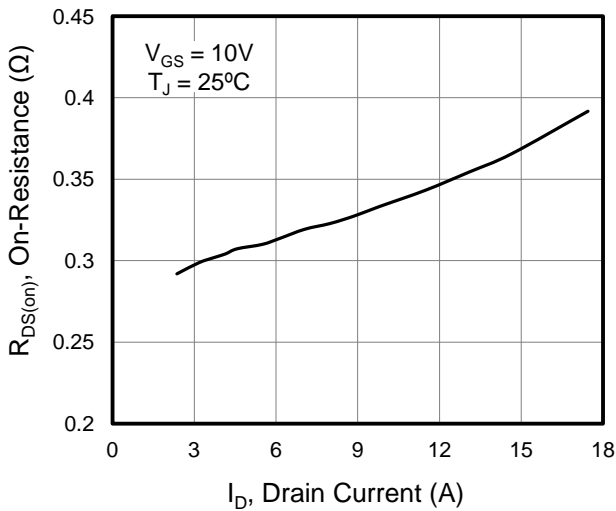


Figure 4. Capacitance

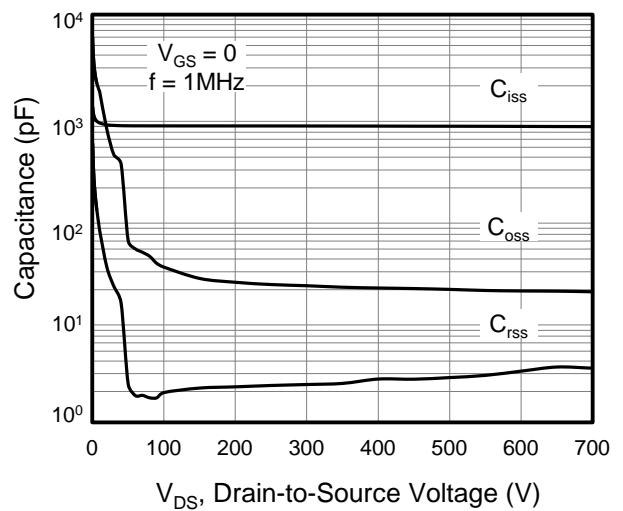


Figure 5. Gate Charge

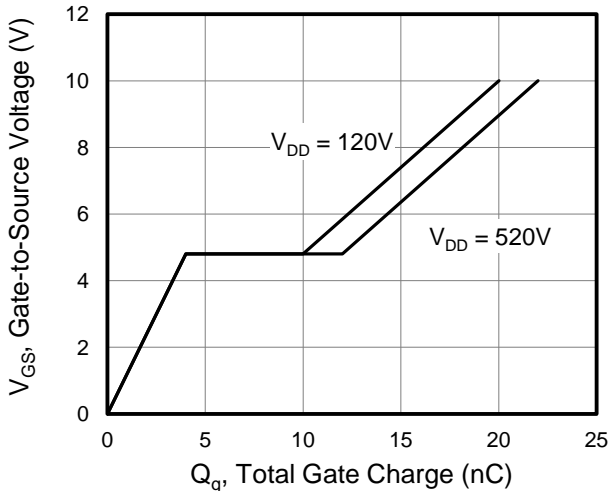
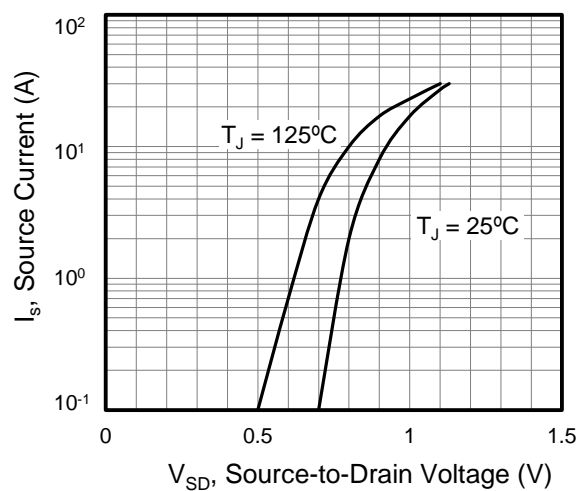


Figure 6. Body Diode Forward Voltage



• Typical Characteristics(Cont.)

Figure 7. On-Resistance vs. Junction Temperature

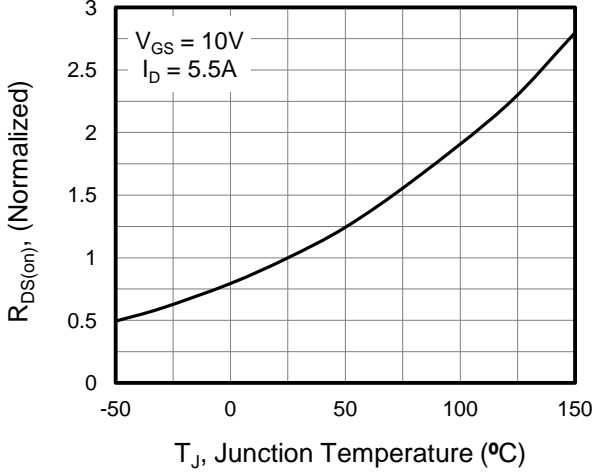


Figure 8. Breakdown voltage vs. Junction Temperature

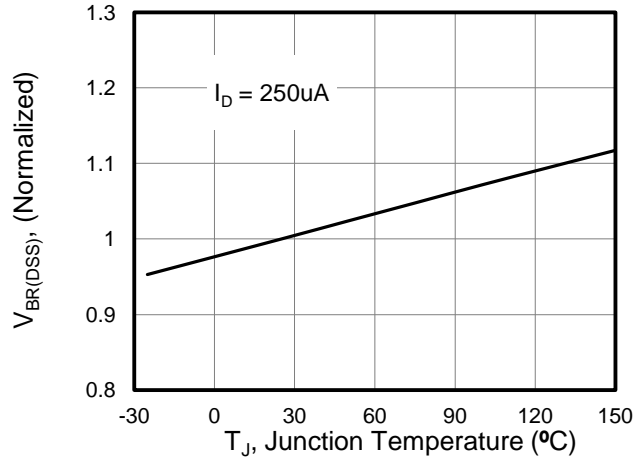


Figure 9. Transient Thermal Impedance

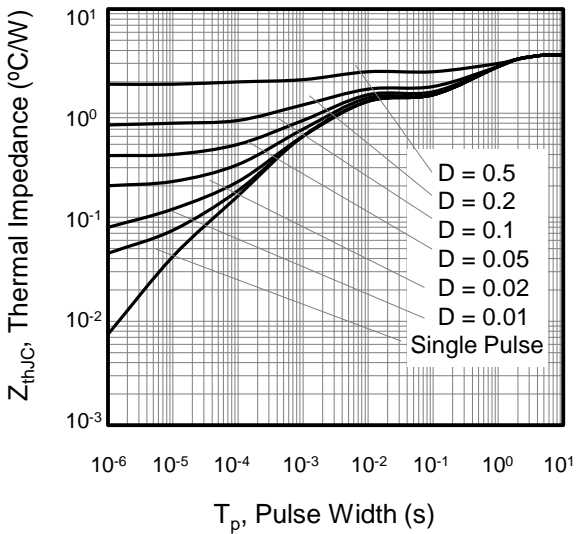
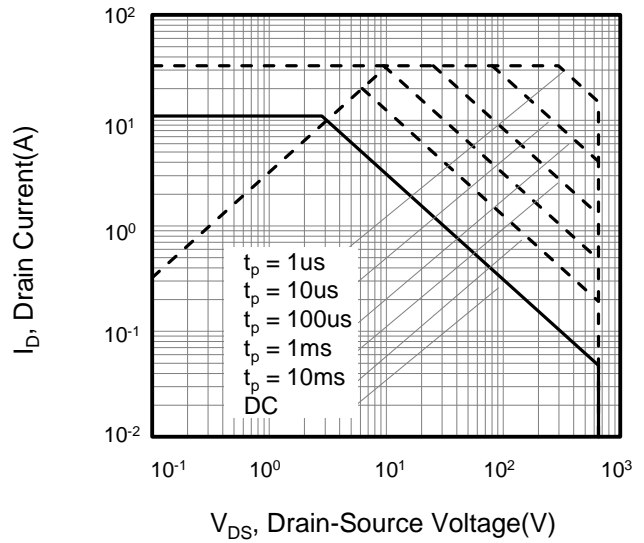


Figure 10. Safe operation area



• Test Circuit and Waveforms

Figure A: Gate Charge Test Circuit and Waveform

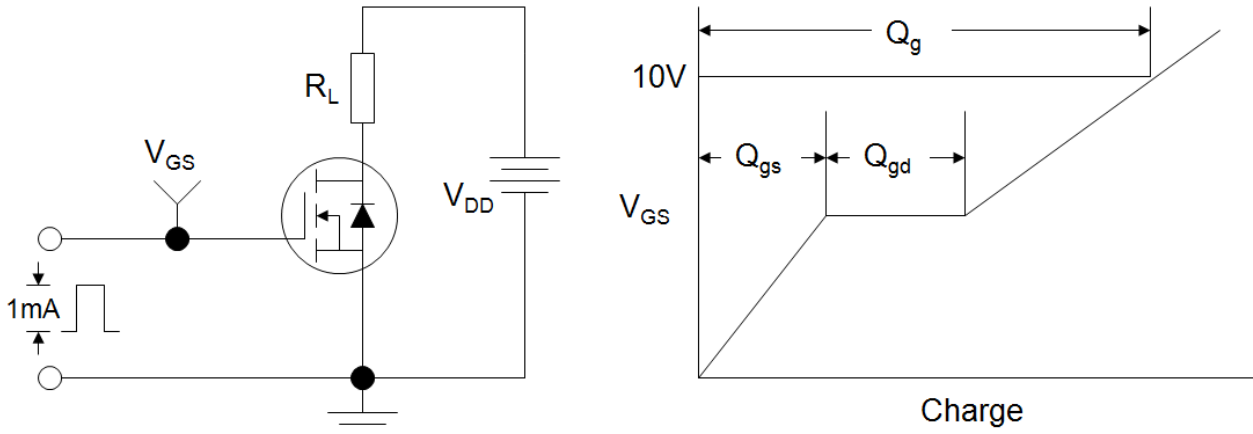


Figure B: Resistive Switching Test Circuit and Waveform

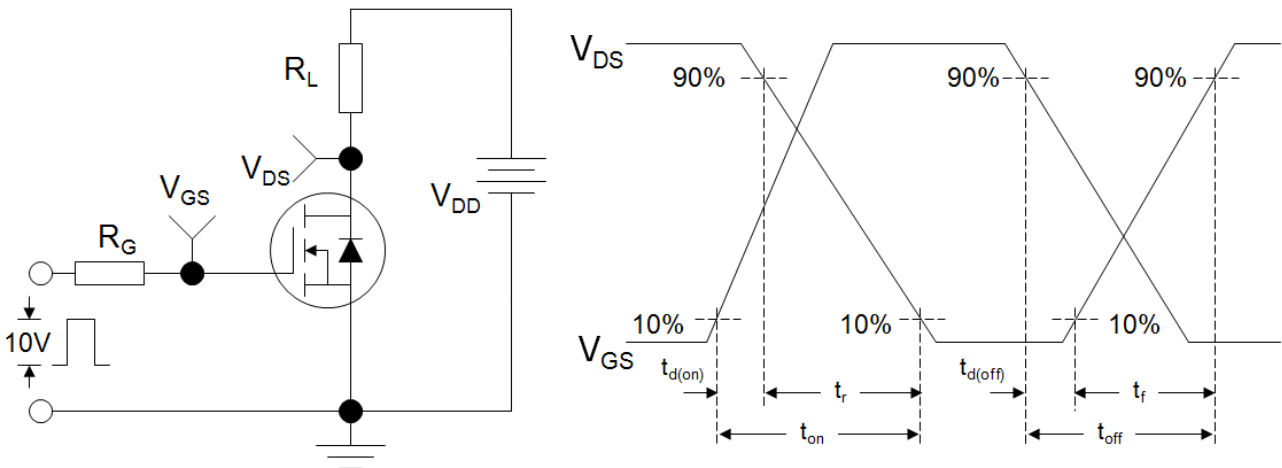
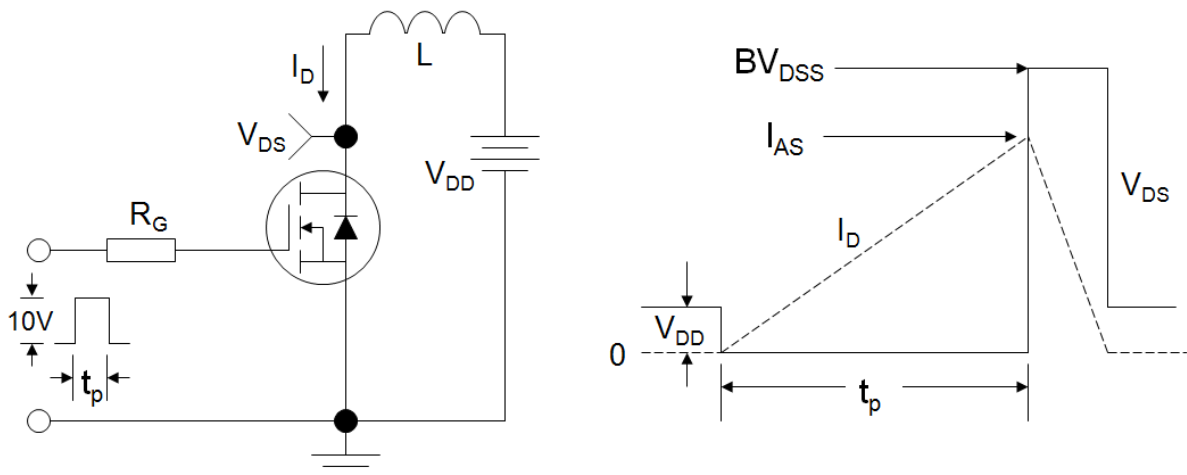


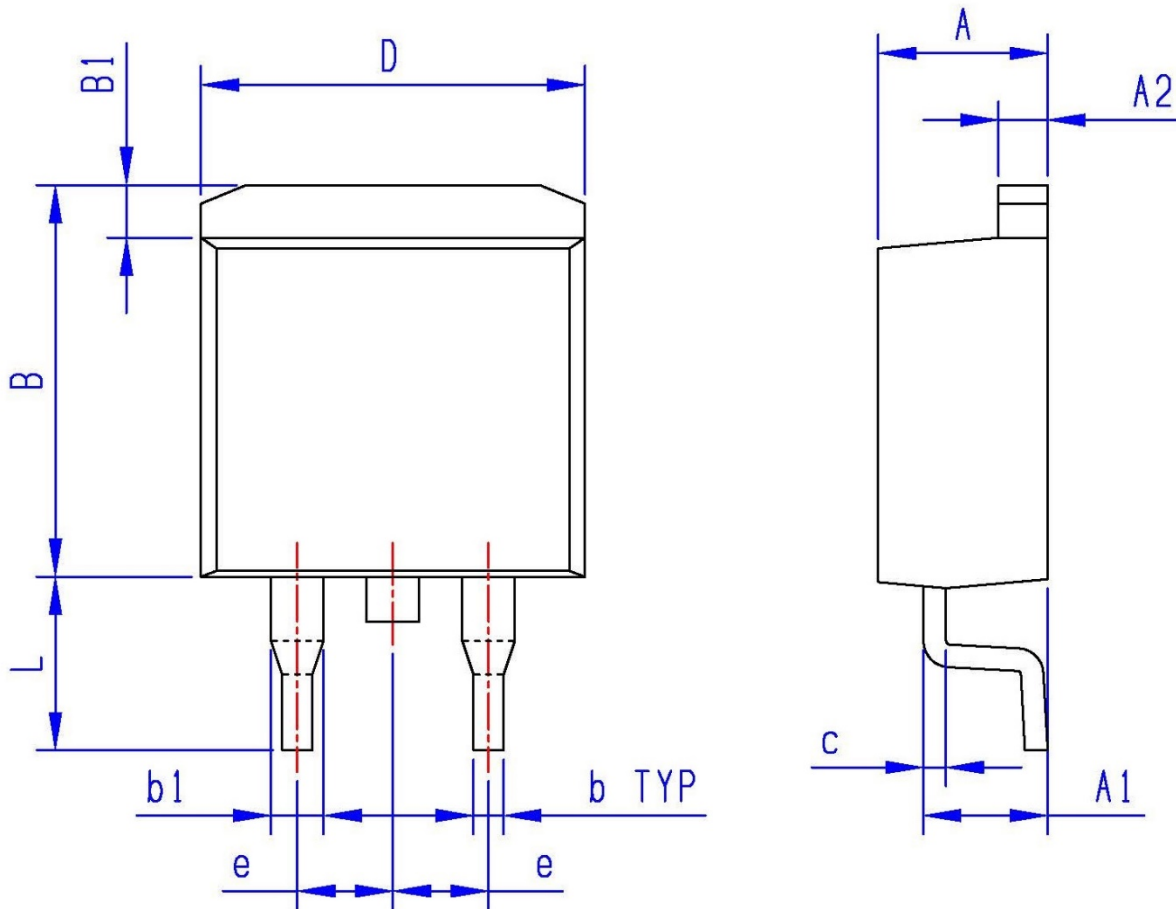
Figure C: Unclamped Inductive Switching Test Circuit and Waveform



• Dimensions (TO-263)

Unit: mm

SYMBOL	min	max	SYMBOL	min	max
A	4.25	4.85	B1	1.20	1.80
A1	2.30	3.00	e	2.40	2.70
A2	1.20	1.40	L	4.80	5.60
b	0.60	0.90			
b1	1.10	1.70			
c	0.40	0.70			
D	9.80	10.60			
B	10.40	11.40			



**• Dimensions (DFN5\*6)**

Unit: mm

SYMBOL	min	max	SYMBOL	min	max
A	1.00	1.20	e	1.27BSC	
b	0.30	0.50	L	0.05	0.30
c	0.20	0.30	L1	0.40	0.80
D	4.80	5.20	L2	1.20	2.00
D1	3.90	4.30	H	3.30	3.80
E	5.50	5.90	I	-	0.18
E1	5.90	6.40			

