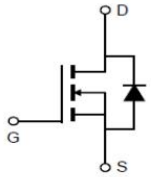
LH65R260

650V Super-Junction MOSFET

•General Description

The SJ MOSFET LH65R260 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.



V_{DS} =650V

$R_{DS(ON)}$ =260mΩ

I_D =15A

■ RoHS COMPLIANT

TO-252

•Features

■Much lower Ron*A performance for On-state efficiency
■Much lower FOM for fast switching effciency

•Application

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

•Ordering Information:

Part number	LH65R260
Package	TO-252
Basic ordering unit (pcs)	2500
Normal Package Material Ordering Code	LH65R260T5-T0252-TAP
Halogen Free Ordering Code	LH65R260T5-T0252-TAP-HF

•Absolute Maximum Ratings（TC =25℃）

PARAMETER		SYMBOL	Value	UNIT
Drain-Source Breakdown Voltage		BV_{DSS}	650	V
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current	TC = 25°C	I_D	15	A
	TC = 100°C		9	
Pulsed drain current (TC = 25°C, tp limited by Tjmax)[1]		I_D pulse	45	A
Single Pulse Avalanche Energy[1]		I_{AR}	2.4	A
Single Pulse Avalanche Energy[2]		E_{AS}	290	mJ
Repetitive Avalanche Energy[1]		E_{AR}	0.44	mJ
Power Dissipation(TC=25℃)		P_D	65	W
Operating Temperature and Storage Temperature Range		T_J/T_{STG}	-55~+150	℃
MOSFET dv/dt ruggedness, V_{DS}=0…480V		dv/dt	50	V/ns
Reverse diode dv/dt, V_{DS}=0…480V,I_{SD}≤I_D		dv/dt	15	V/ns

●Electronic Characteristics

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V, I_D=250uA	650	--	--	V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS}=VGS,I_D=250uA	2.5	--	4.5	V
Drain-source On Resistance[3]	$R_{DS(ON)}$	V_{GS} =10V, I_D=7.5A	--	0.24	0.26	Ω
Drain-Source Leakage Current	I_{DSS}	V_{DS}=650V,V_{GS}=0V,T_J=25℃	--	--	1	uA
		V_{DS}=650V,V_{GS}=0V,T_J=125℃	--	--	100	
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±30	--	--	±100	nA
Forward Transconductance[3]	R_G	f=1.0MHz open drain	--	--	12.5	S
Input Capacitance	Ciss	V_{GS} = 0V, V_{DS} = 100V f = 1.0MHz	--	1202	--	pF
Output Capacitance	Coss		--	43	--	
Reverse transfer Capacitance	Crss		--	5	--	
Turn -Off Delay Time	Td(off)	V_{DD}=400V, I_D =15.0A R_G=25Ω	--	100	--	ns
Turn-on delay time	Td(on)		--	25	--	
Rise time	Tr		--	63	--	
Fall time	Tf		--	50	--	
Total Gate Charge	Qg	I_D =15A, V_{DS} = 520V V_{GS} = 10V	--	27	---	nC
Gate-to-Source Charge	Qgs		--	5.5	--	
Gate-to-Drain Charge	Qgd		--	10.5	---	
Continuous Diode Forward Current	I_S		--	--	15.0	A
Pulsed Diode Forward Current	I_{SM}		--	--	45.0	A
Diode Forward Voltage	V_{SD}	Tj=25°C, Is=15.0A V_{GS} =0V	--	0.9	1.2	V
Reverse Recovery Time	trr	V_{RR}=400V, If=Is di_F/dt=100A/μs	--	410	--	ns
Reverse Recovery Charge	Qrr		--	4.1	--	uC
Peak Reverse Recovery Current	I_{RRM}		--	20	--	A

●Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-case	Rth_{JC}	1.92	℃/W
Thermal Resistance Junction-ambient	Rth_{JA}	62	℃/W

Notes:

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

2. I_{AS} = 1.8A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25°C

3. Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2%

●Typical Characteristics T_J=25ºC,unless otherwise noted

Figure 1. Output Characteristics

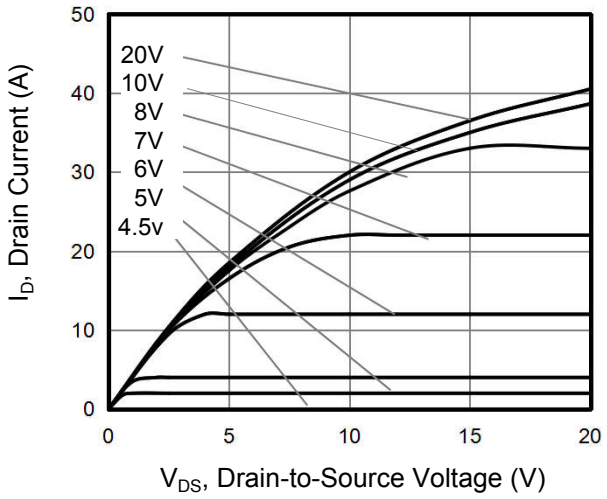


Figure 2. Transfer Characteristics

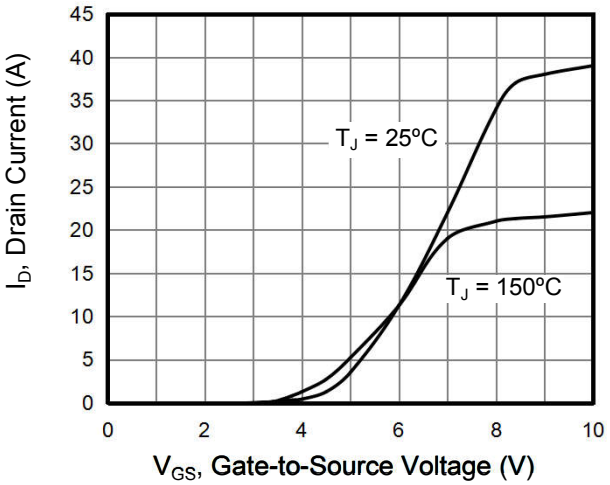


Figure 3. On-Resistance vs. Drain Current

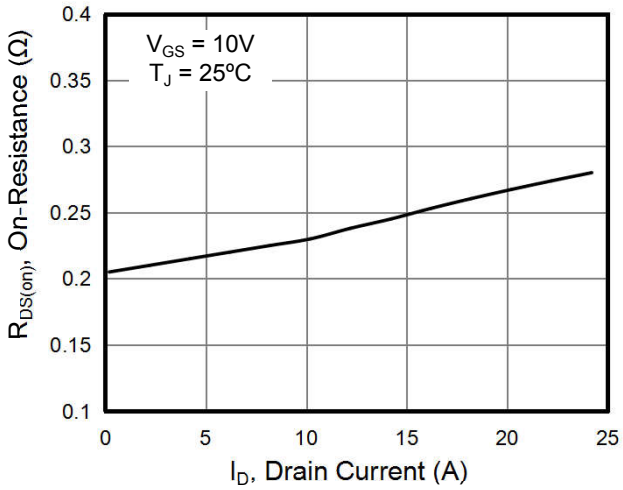


Figure 4. Capacitance

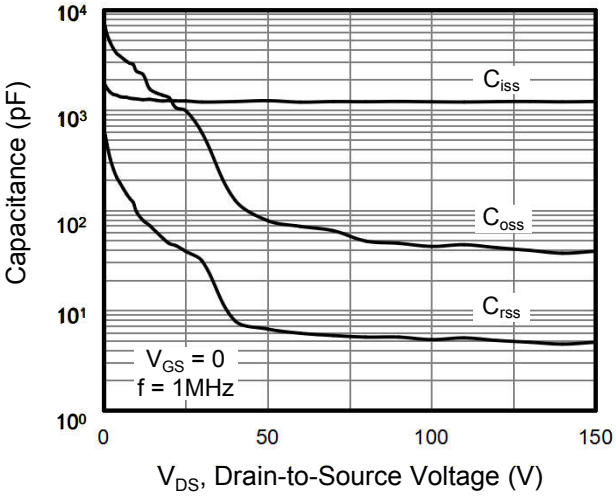


Figure 5. Gate Charge

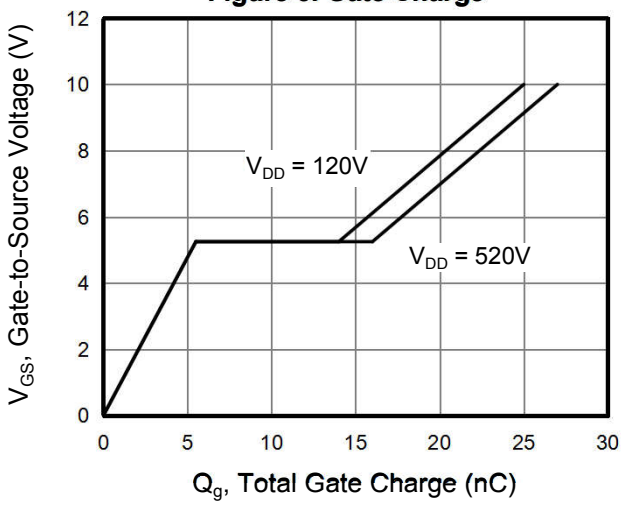
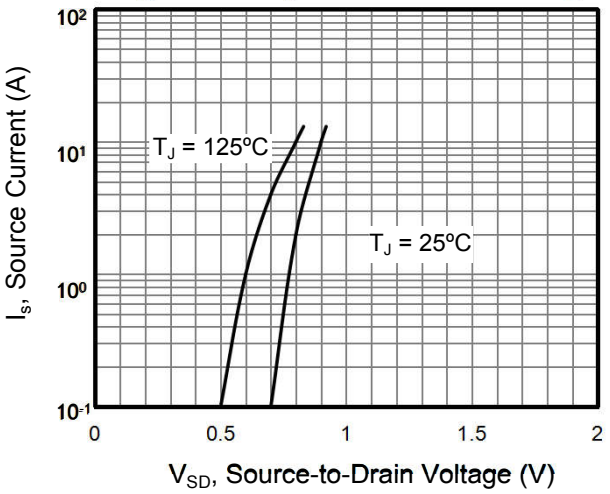


Figure 6. Body Diode Forward Voltage



●Typical Characteristics(cont.)

Figure 7. On-Resistance vs. Junction Temperature

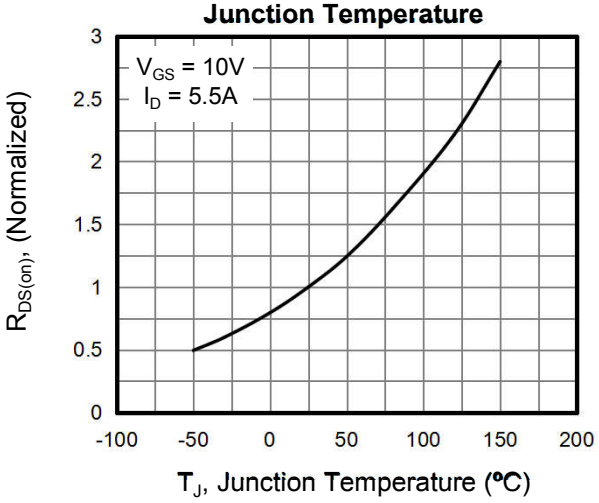


Figure 8. Threshold Voltage vs. Junction Temperature

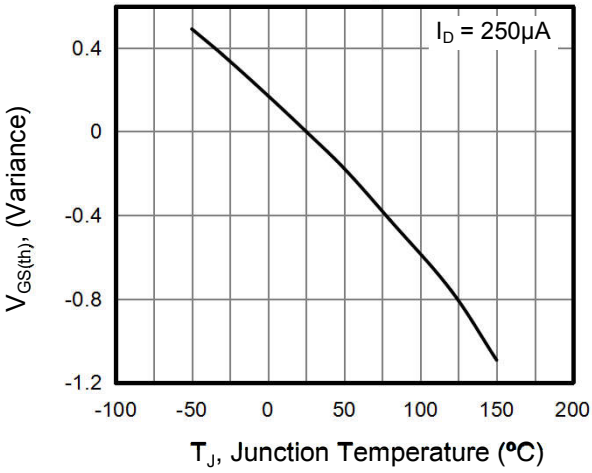


Figure 9. Breakdown voltage vs. Junction Temperature

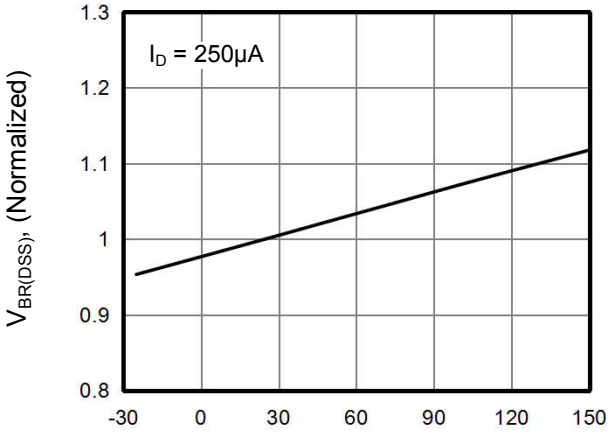


Figure10 . Transient Thermal Impedance TO-252

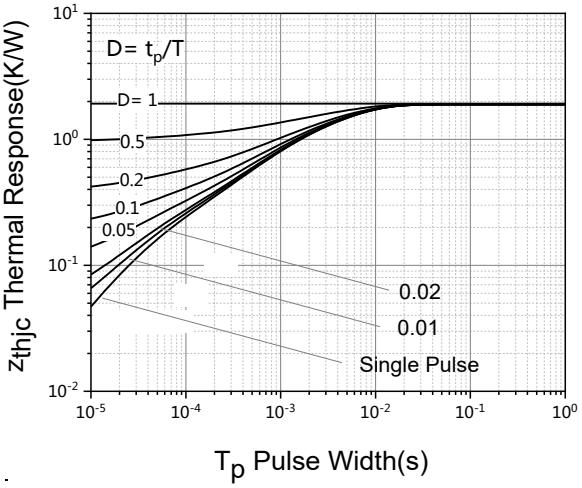
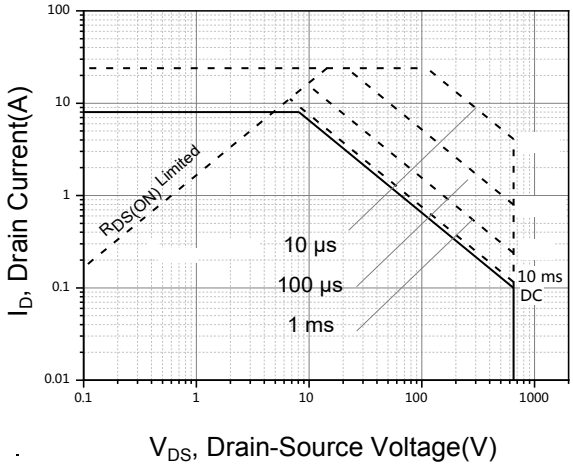


Figure 11. Safe Operation area for TO-252,T_C=25 ℃



●Test Circuit and Waves

Figure A：Gate Charge Test Circuit and Waveform

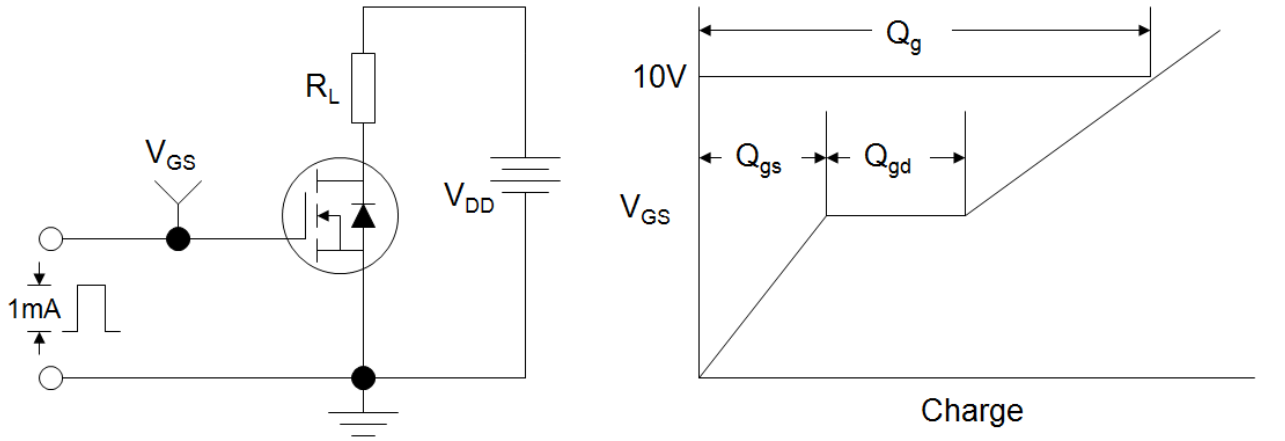


Figure B：Resistive Switching Test Circuit and Waveform

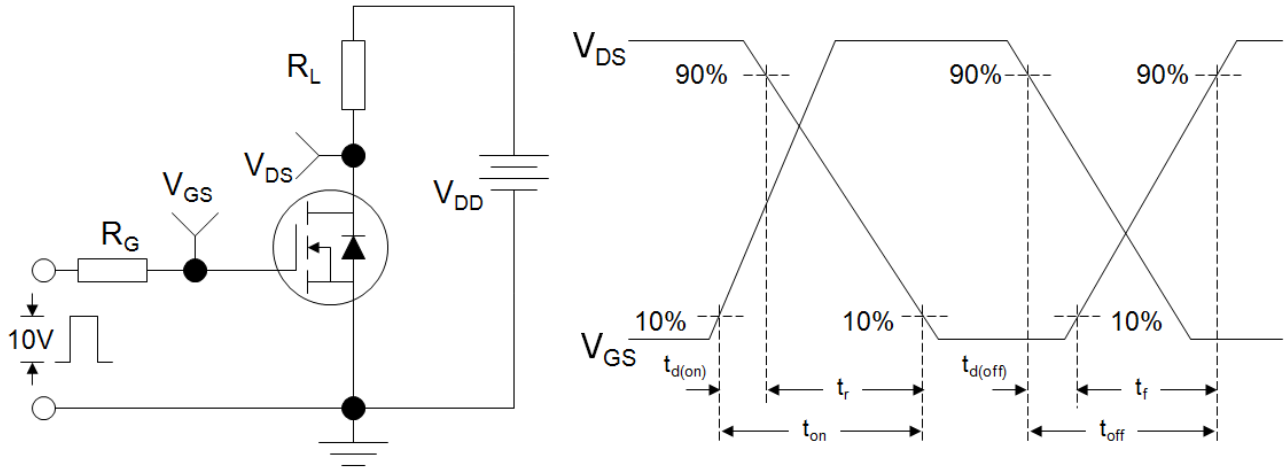
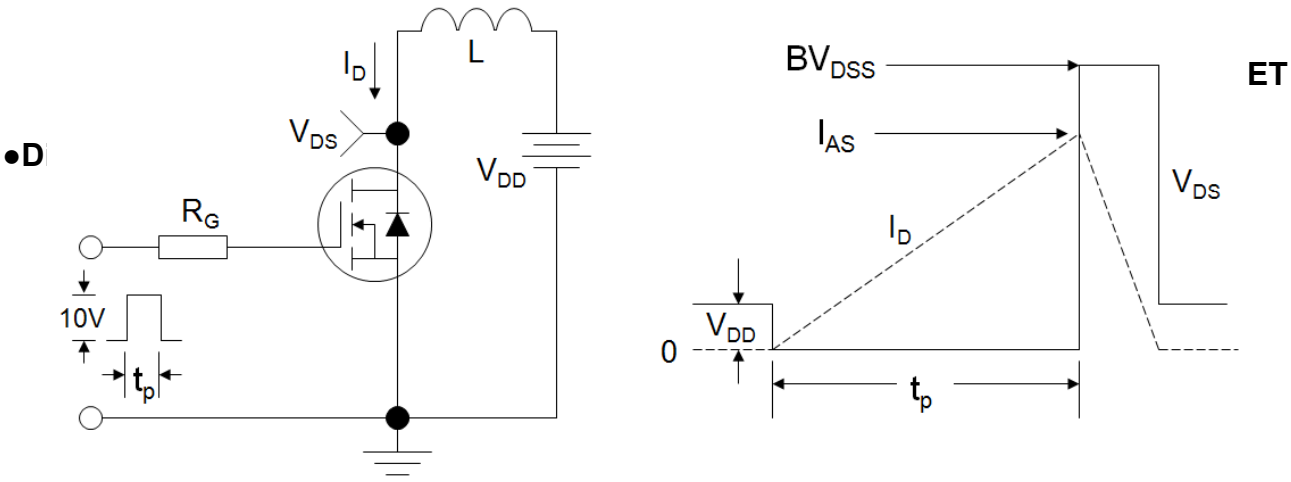


Figure C：Unclamped Inductive Switching Test Circuit and Waveform



●D ET

●Dimensions（TO-252)

UNIT:mm

SYMBOL	min	max	SYMBOL	min	max
A	2.10	2.50	L2	0.60	1.20
b	0.50	0.90	L3	1.20	1.80
b1	0.70	1.20	B	0.80	1.30
b2	0.40	0.70	C	0.40	0.70
D	6.20	6.80	D1	5.10	5.60
E	5.80	6.40	e1	2.10	2.45
L	2.60	3.60	e2	4.40	4.80
L1	0.80	1.60