

●General Description

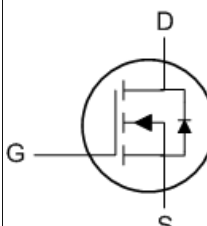
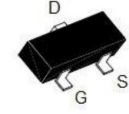
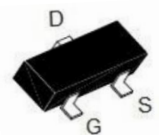
The N-Channel MOSFET LH017N02 has the low $R_{DS(on)}$, low gate charge, fast switching and excellent avalanche characteristics. This device is suitable for fast charge and lighting.

●Features

- Fast switching speed
- High density cell design for ultra low On-Resistance

●Application

- Switching applications
- Power management
- Lead free and green devices available

	$V_{DS} = 20V$ $R_{DS(ON)} = 17m\Omega$ $I_D = 6.5A$
 SOT-23	 SOT-23-3L

■ RoHS COMPLIANT

●Ordering Information:

Part Number	LH017N02	LH017N02
Package	SOT-23	SOT-23-3L
Basic Ordering Unit (pcs)	3000	3000
Normal Package Material Ordering Code	LH017N02S23-SOT23-TAP	LH017N02S23L-SOT23-3L-TAP
Halogen Free Ordering Code	LH017N02S23-SOT23-TAP-HF	LH017N02S23L-SOT23-3L-TAP-HF

●Absolute Maximum Ratings (TC = 25°C)

PARAMETER	SYMBOL	Value	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current ¹ , $T_C = 25^\circ C$	I_D	6.5	A
	$I_{D(TC=70^\circ C)}$	5.5	
Drain Current - Pulsed ¹	I_{DM}	26	A
Power Dissipation($T_C=25^\circ C$)	P_D	1.0	W
	$P_{D(TC=70^\circ C)}$	0.66	
Operating Temperature	T_J	-55~+150	°C
Storage Temperature	T_{STG}	-55~+150	°C

●Electronic Characteristics

PARAMETER	SYMBOL	TEST CONDITION	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	20	--	--	V
Gate Threshold Voltage ¹	$V_{GS(TH)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.45	--	1.0	V
Drain-source On Resistance ¹	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=4A$	--	15	17	mΩ
		$V_{GS}=2.5V, I_D=3A$	--	20	28	
		$V_{GS}=1.8V, I_D=2A$	--	30	40	
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=16V, V_{GS}=0V, T_J=25^\circ C$	--	--	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	--	--	±100	nA
Input Capacitance	C_{iss}	$V_{GS}=0V,$ $V_{DS}=15V$ $f=1.0MHz$	--	670	--	pF
Output Capacitance	C_{oss}		--	73	--	
Reverse transfer Capacitance	C_{rss}		--	68	--	
Turn-on delay time	$T_d(on)$	$V_{DS}=10V,$ $V_{GS}=4.5V,$ $R_G=3.3\Omega$	--	5.2	--	ns
Rise time	T_r		--	54	--	
Turn -Off Delay Time	$T_d(off)$		--	23	--	
Fall time	T_f		--	9.2	--	
Total Gate Charge(10V)	Q_g	$I_D=4.0A,$ $V_{DS}=15V$ $V_{GS}=4.5V$	--	8.5	--	nC
Gate-to-Source Charge	Q_{gs}		--	1.36	--	
Gate-to-Drain Charge	Q_{gd}		--	2.3	--	
Diode Forward Voltage ¹	V_{SD}	$T_J=25^\circ C, I_S=1A$ $V_{GS}=0V$	--	--	1.2	V

●Thermal Characteristics

PARAMETER	SYMBOL	MAX	UNIT
Thermal Resistance Junction-ambient ¹	R_{thJA}	120	°C/W

Notes:

- 1.Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. Pulse test: pulse width ≤ 300us, duty cycle ≤ 2%. Essential independent of operating temperature.
- 3.Guaranteed by design, not subject to production testing.

● **Typical Characteristics**

Fig.1 Typical Output Characteristics

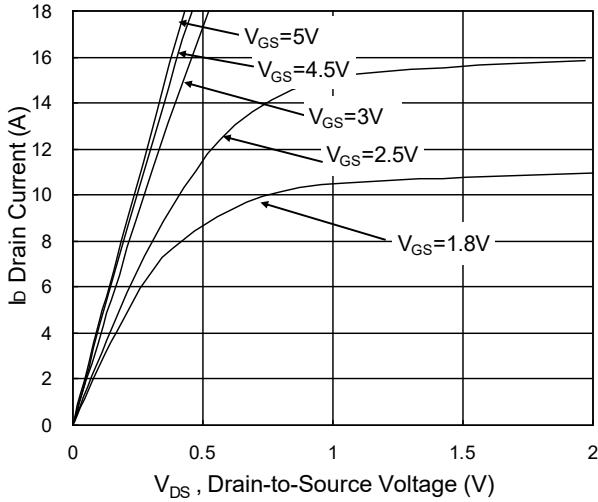


Fig.2 On-Resistance vs. Gate-Source

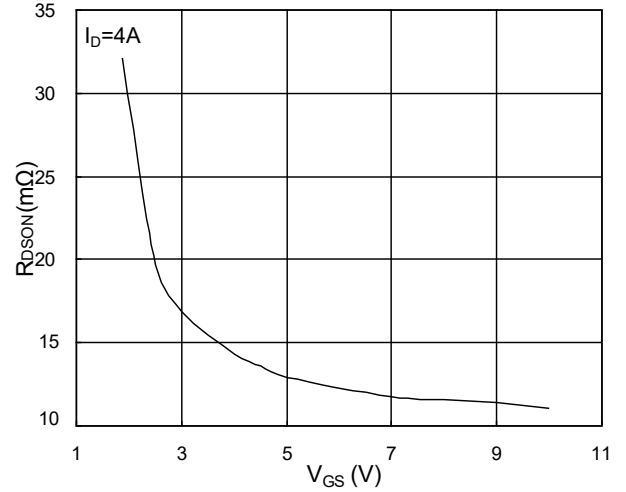


Fig.3 Forward Characteristics Of Reverse

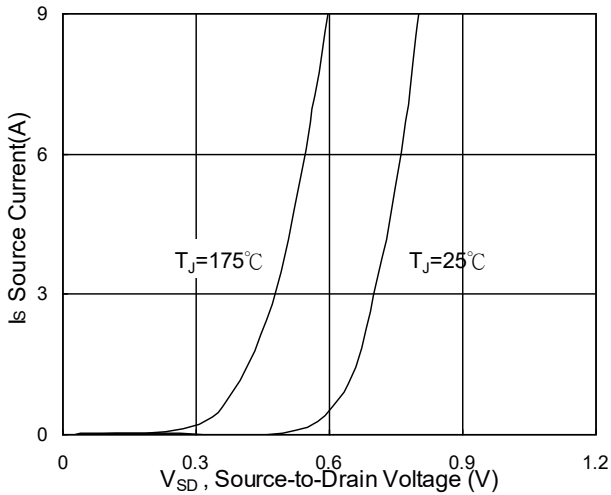


Fig.4 Gate-Charge Characteristics

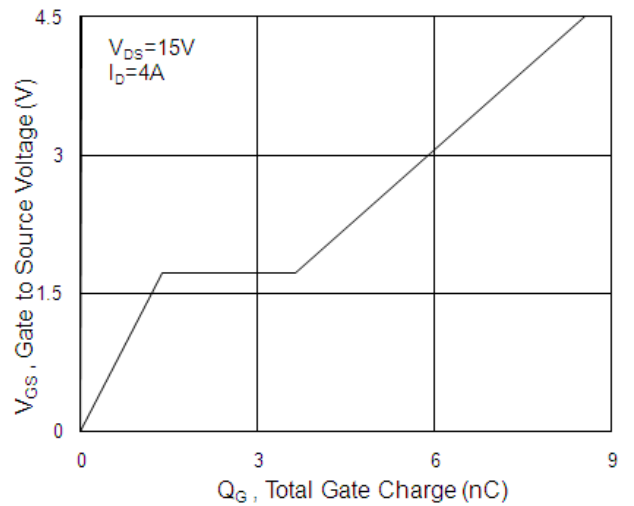


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

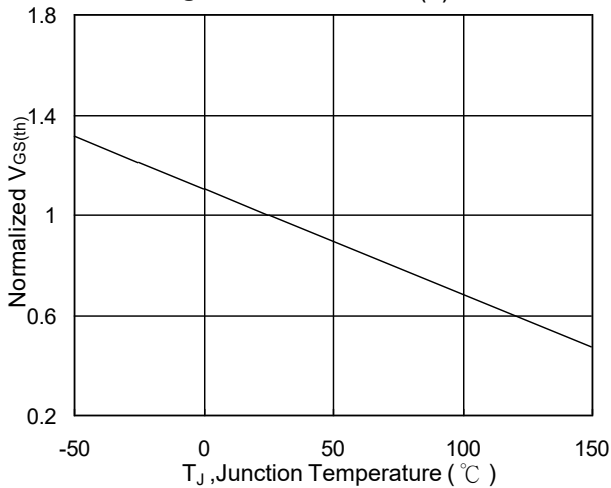
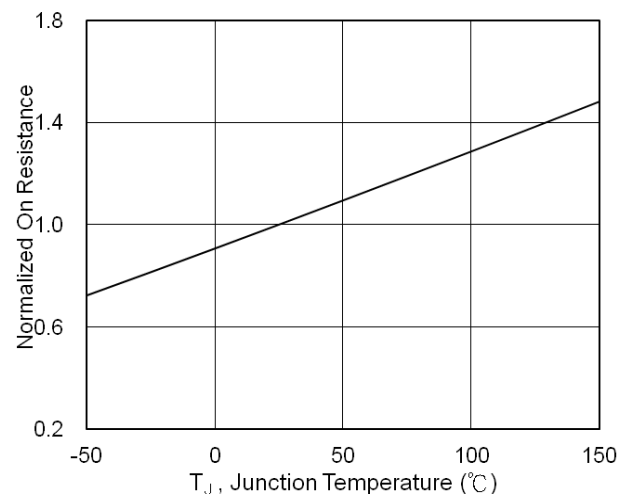


Fig.6 Normalized $R_{DS(on)}$ vs. T_J



● **Typical Characteristics(cont.)**

Fig.7 Capacitance

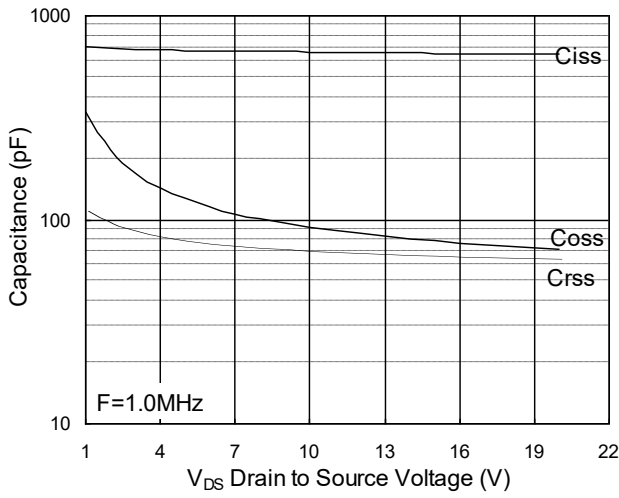


Fig.8 Safe Operating Area

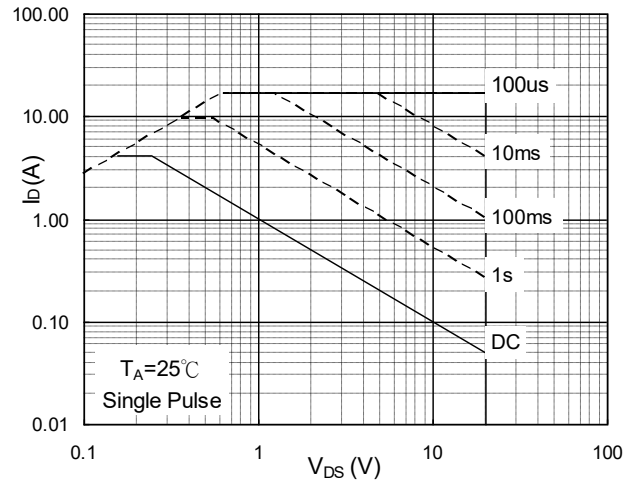


Fig.9 Normalized Maximum Transient Thermal Impedance

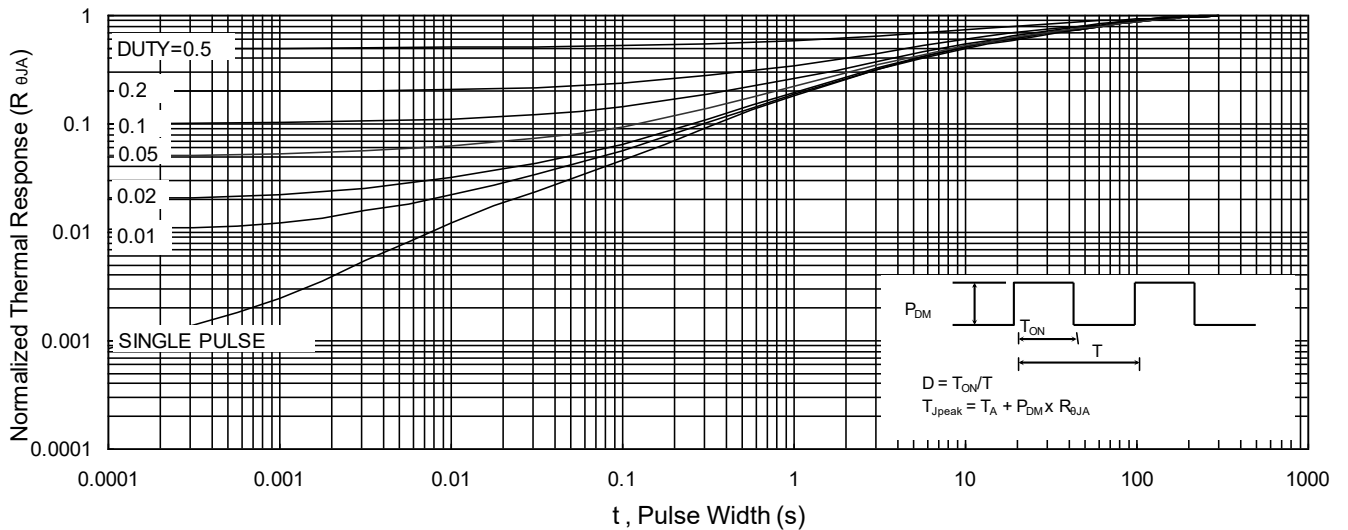


Fig.10 Switching Time Waveform

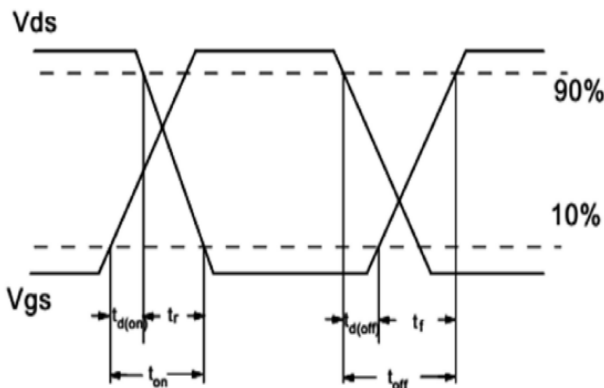
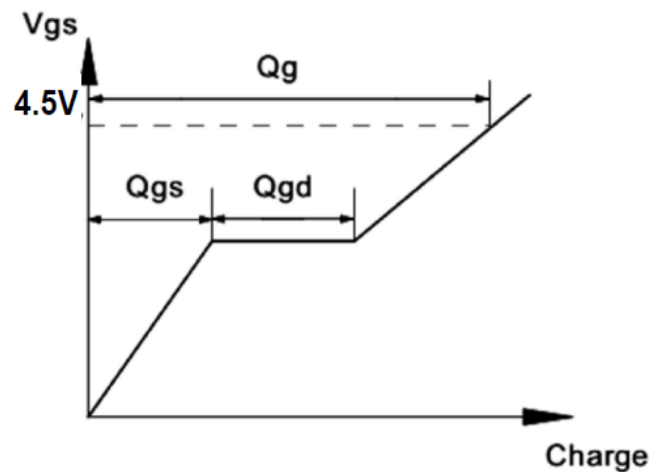
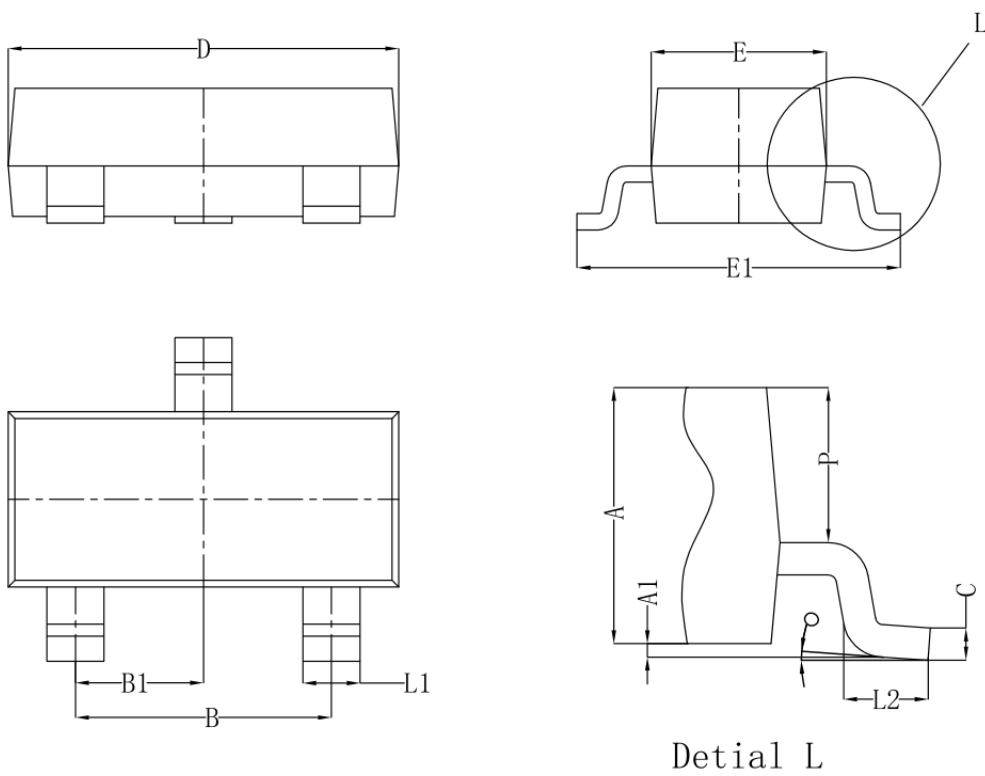


Fig.11 Gate Charge Waveform



●Dimensions(SOT-23)

Symbol	Dim in mm		
	Min	Nor	Max
A	0.900	1.000	1.100
A1	0.000	0.050	0.100
L1	0.350	0.400	0.500
C	0.100	0.110	0.120
D	2.800	2.900	3.000
E	1.250	1.300	1.350
E1	2.250	2.400	2.550
B	1.800	1.900	2.000
B1	0.950 TYP		
L2	0.200	0.350	0.450
P	0.550	0.575	0.600



•Dimensions (SOT-23-3L)

Symbol	Dim in mm		
	Min	Nor	Max
A	1.050	1.100	1.150
A1	0.000	0.050	0.100
L1	0.300	0.400	0.500
C	0.100	0.150	0.200
D	2.820	2.920	3.020
E	1.500	1.600	1.700
E1	2.650	2.800	2.950
B	1.800	1.900	2.000
B1	0.950 TYP		
L2	0.300	0.450	0.600
∠	0°	4°	8°

