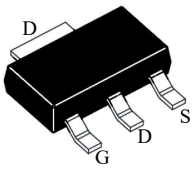
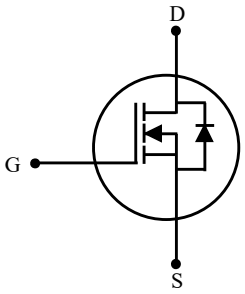
SMTQ10N1K1LSSEH

N-Channel Enhancement Mode Field Effect Transistor

FEATURES

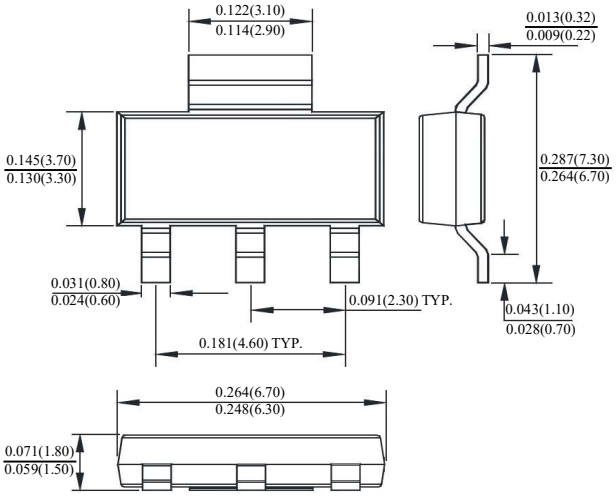
· Suffix "H" indicates Halogen-free parts, ex.SMTQ10N1K1LSSEH





D	Drain
G	Gate
S	Source

SOT-223



Dimensions in inch and (millimeter)

Maximum Ratings(T_A=25 ℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Drain Current	T_A=25°C T_A=70°C	I_D	4.0 3.0	A
Pulsed Drain Current	(Note 1)	I_{DM}	20	A
Single-Pulse Avalanche Current		I_{AS}	5	A
Single-Pulse Avalanche Energy	(Note 2)	E_{AS}	3.7	mJ
Power Dissipation		P_D	2.7	W
Thermal Resistance from Juntion to Ambient	(Note 3) (Note 4)	$R_{\theta JA}$	100 45	℃/W
Operating and Storage Temperature Range		T_J ,T_{stg}	- 55 to + 150	℃

Note :

1. Pulse width≤100μs, Duty Cycle≤2%, Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150℃.
2. Limited by $T_{J(MAX)}$, starting T_J=25°C, L=0.3mH, R_g=25Ω , I_{AS}=5A, V_{GS}=10V.
3. Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate, t<10s.
4. Device mounted on FR-4 substrate PC board, minimum recommended footprint. Steady state.

SMTQ10N1K1LSSEH

N-Channel Enhancement Mode Field Effect Transistor

Electrical Characteristics(T_A=25 ℃ unless otherwise specified)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Static						
Drain Source Breakdown Voltage	I_D=250μA	$V_{(BR)DSS}$	100	-	-	V
Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	$V_{GS(th)}$	1.2	-	2.5	V
Zero Gate Voltage Drain Current	V_{DS}=80V	I_{DSS}	-	-	1	μA
Gate-Body Leakage Current	V_{GS}=±20V	I_{GSS}	-	-	±0.1	μA
Drain-Source On-State Resistance	V_{GS}=10V, I_D=4A V_{GS}=4.5V, I_D=3A	$R_{DS(on)}$	- -	106 -	115 125	mΩ
Dynamic						
Forward Transfer Admittance	V_{DS}=5V, I_D=4A	g_{FS}	-	8	-	S
Gate Resistance	V_{GS}=0V, V_{DS}=0V, f=1MHz	R_g	-	1.1	-	Ω
Total Gate Charge	V_{DS}=50V, I_D=4A, V_{GS}=4.5V	Q_g	-	9	-	nC
	V_{DS}=50V, I_D=4A, V_{GS}=10V		-	20	-	
Gate-Source Charge		Q_{gs}	-	4	-	
Gate-Drain Charge		Q_{gd}	-	2	-	
Input Capacitance	V_{DS}=50V, V_{GS}=0V, f=1MHz	C_{iss}	-	1155	-	pF
Output Capacitance		C_{oss}	-	28	-	
Reverse Transfer Capacitance		C_{rss}	-	25	-	
Turn-On Delay Time	V_{DS}=50V, V_{GS}=10V, I_D=4A, R_g=3.3Ω	$t_{d(on)}$	-	14	-	ns
Turn-On Rise Time		t_r	-	4	-	
Turn-Off Delay Time		$t_{d(off)}$	-	13	-	
Turn-Off Fall Time		t_f	-	2	-	
Drain-Source Body Diode						
Drain-Source Diode Forward Voltage	V_{GS}=0V, I_S=1A	V_{SD}	-	-	1.2	V
Diode Continuous Forward Current	-	I_S	-	-	4	A
Diode Pulse Current		I_{SM}	-	-	20	A
Reverse Recovery Time	I_S=4A, di/dt=100A/μs	t_{rr}	-	21	-	ns
Reverse Recovery Charge		Q_{rr}	-	22	-	nC

RATINGS AND CHARACTERISTIC CURVES

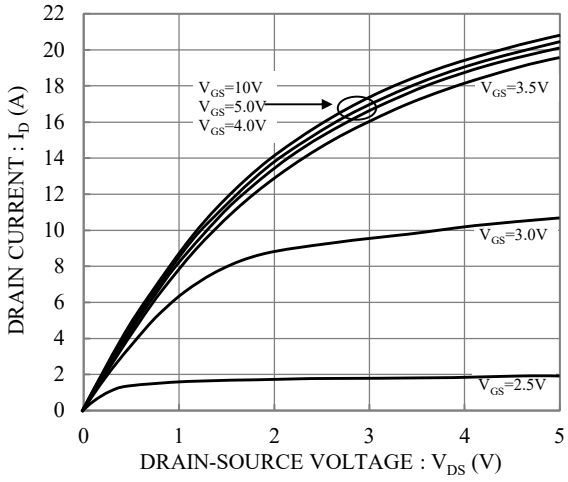


Fig.1 Typical Output Characteristics

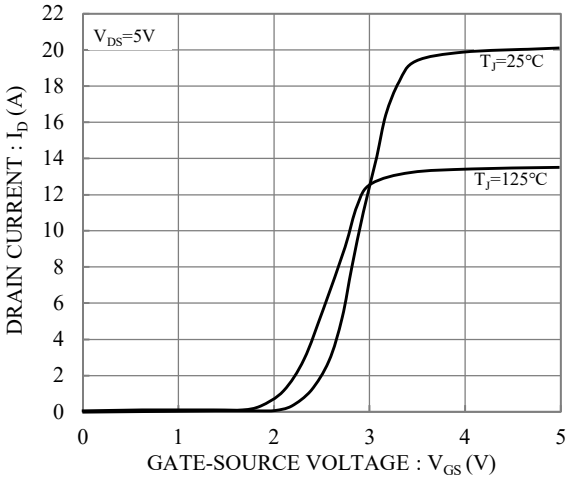


Fig.2 Typical Transfer Characteristics

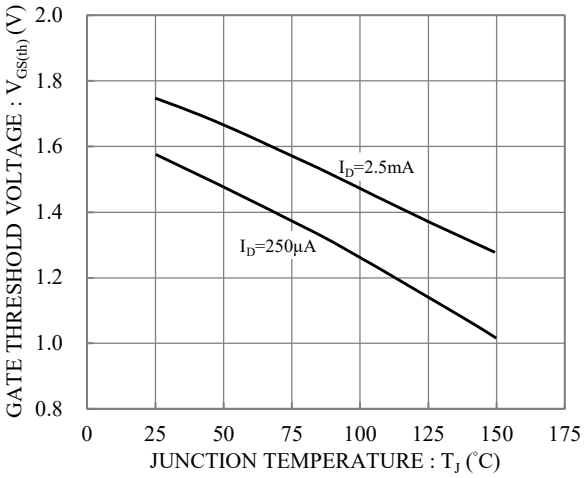


Fig.3 Gate Threshold Voltage vs. Junction Temperature

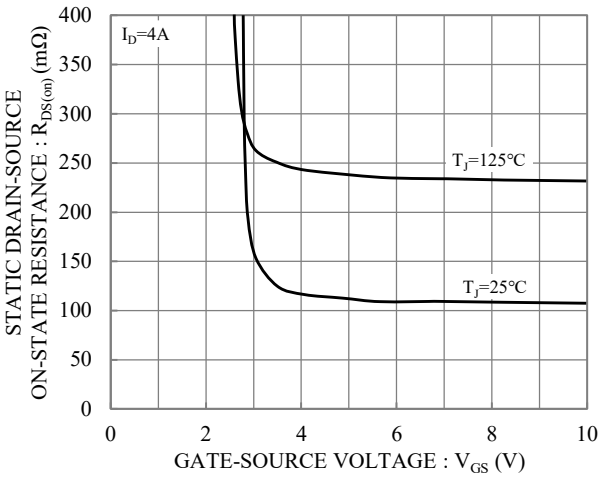


Fig.4 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

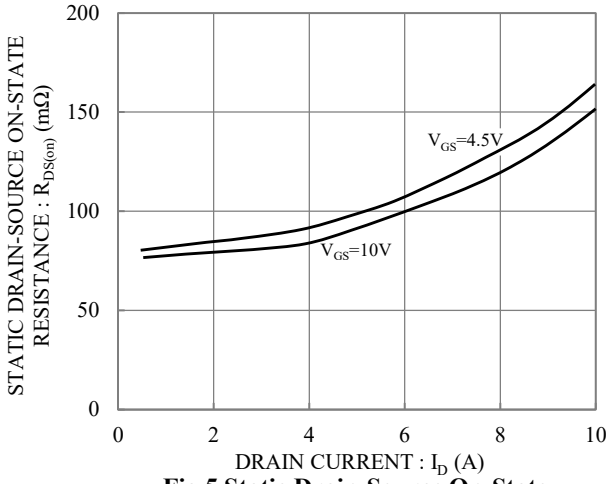


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

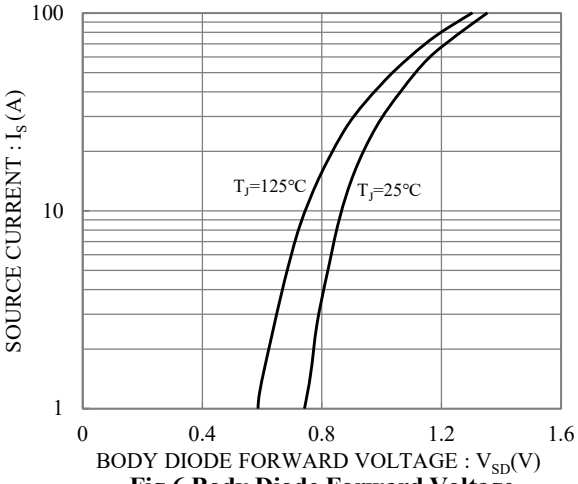


Fig.6 Body Diode Forward Voltage vs. Source Current

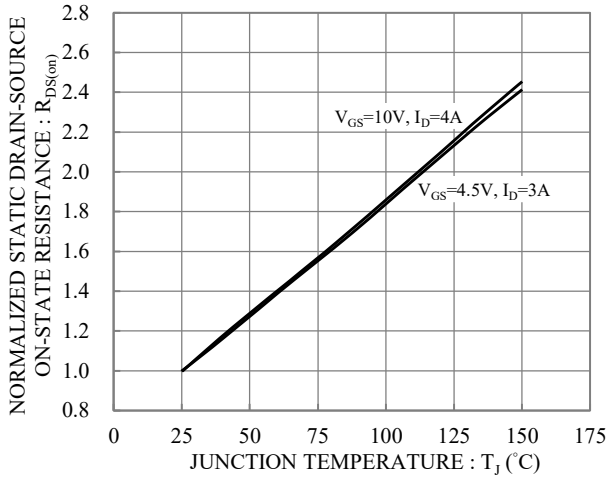


Fig.7 Drain-Source On-State Resistance vs. Junction Tempearture

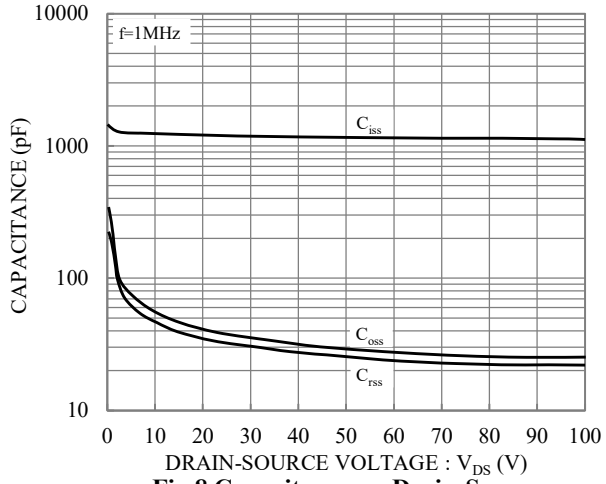


Fig.8 Capacitance vs. Drain-Source Voltage

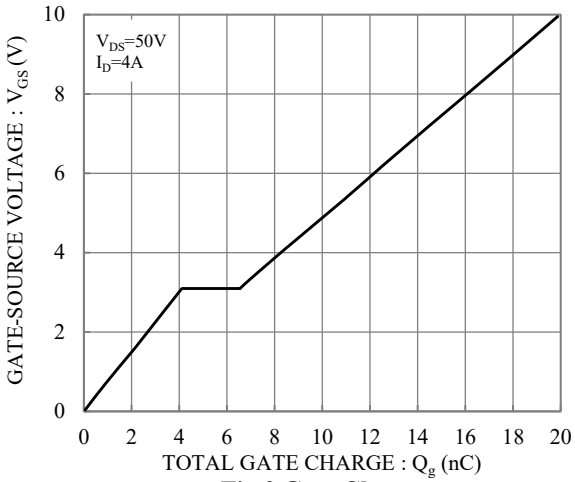


Fig.9 Gate Charge

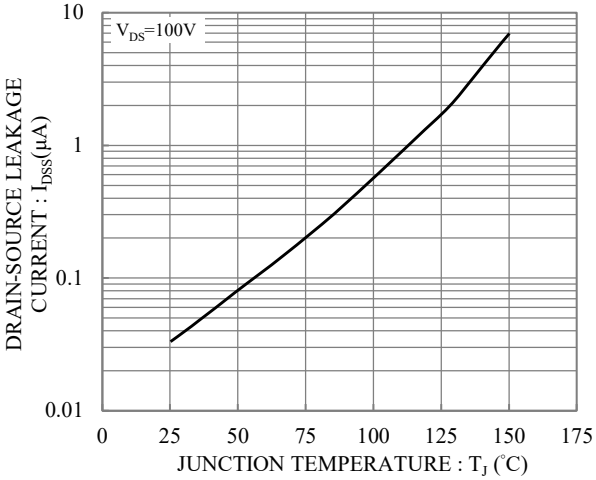


Fig.10 Drain-Source Leakge Current vs. Junction Temperature

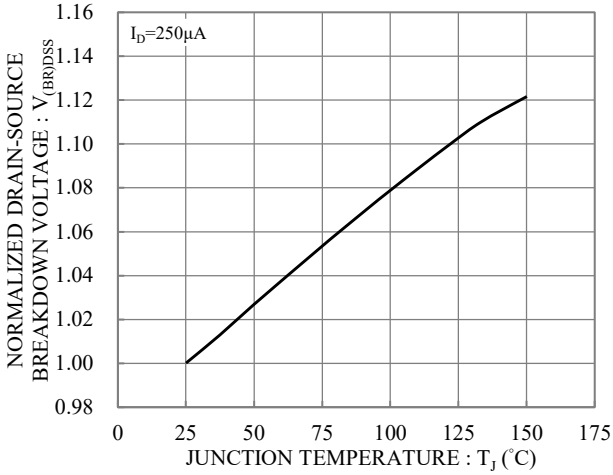


Fig.11 Brekdown Voltage vs. Junction Temperature

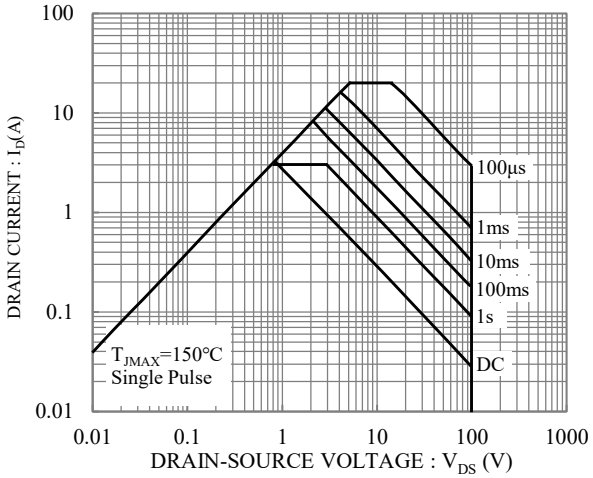


Fig.12 Safe Operation Area

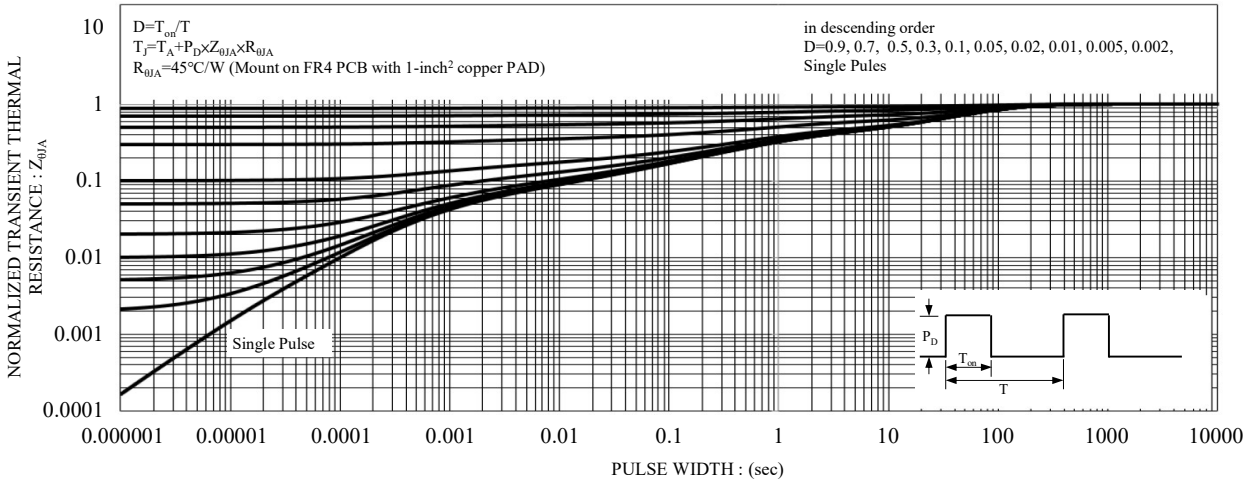
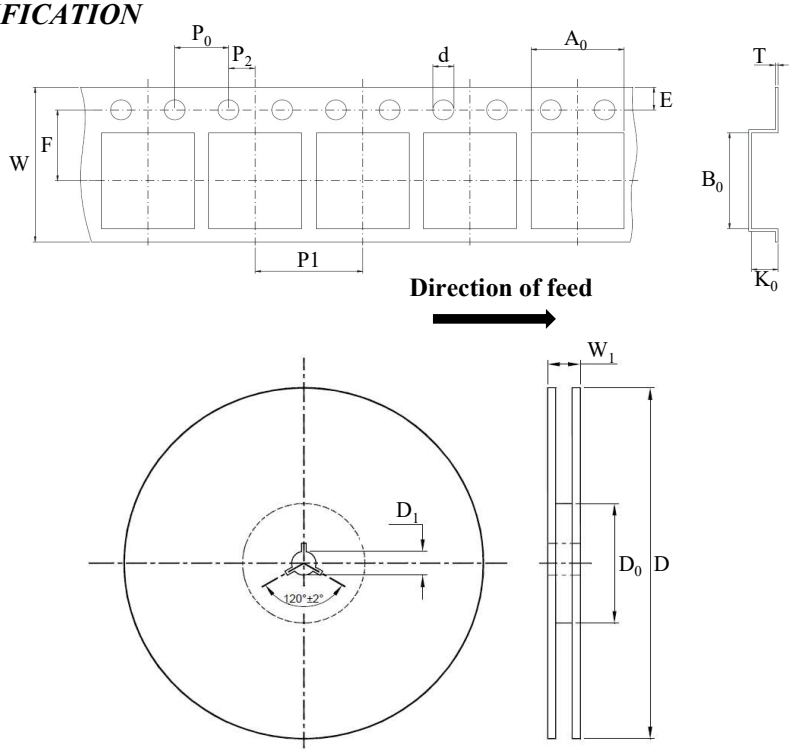


Fig.13 Maximum Transient Thermal Impedance

SMTQ10N1K1LSSEH

N-Channel Enhancement Mode Field Effect Transistor

TAPE & REEL SPECIFICATION



Item	Symbol	SOT-223
Carrier width	A_0	7.05 ± 0.10
Carrier length	B_0	7.45 ± 0.10
Carrier depth	K_0	1.95 ± 0.10
Sprocket hole	d	1.50 ± 0.10
Reel outside diameter	D	330.00 ± 2.00
Feed hole width	D_0	100.00
Reel inner diameter	D_1	16.40 ± 0.50
Sprocke hole position	E	1.75 ± 0.10
Punch hole position	F	5.50 ± 0.10
Sprocke hole pitch	P_0	4.00 ± 0.10
Punch hole pitch	P_1	8.00 ± 0.10
Embossment center	P_2	2.00 ± 0.10
Overall tape thickness	T	0.25 ± 0.05
Tape width	W	12.00 ± 0.20
Reel width	W_1	MAX. 20.00

ORDER INFORMATION

Part Number	Marking Code	Reel Size	Quantity
SMTQ10N1K1LSSEH	TQ10N1K1LS	13"	3,000

SUGGESTED SOLDER PAD LAYOUT

Unit:mm