SMX06C7KDTH

Comlementary Pair Enhancement Mode MOSFET

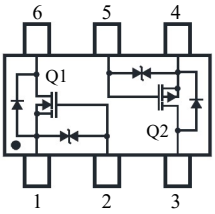
FEATURES

· Low on resistance $R_{DS(ON)}$

· Low gate threshold voltage

· ESD protected

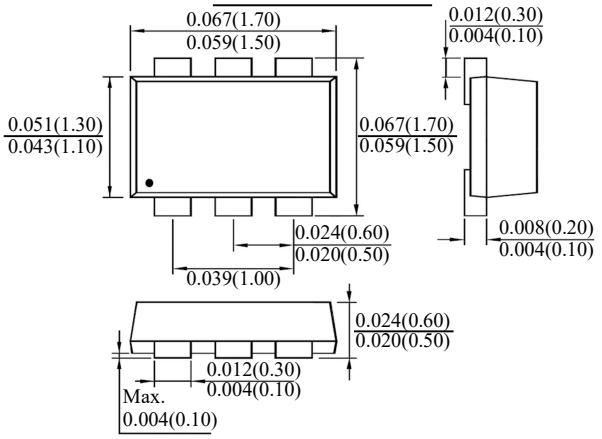
· Suffix "H" indicates Halogen-free parts, ex. SMX06C7KDTH



Top View

1.Source 2.Gate 3.Drain
4.Source 5.Gate 6.Drain

SOT-563



Dimensions in inch and (millimeter)

Maximum Ratings(T_A=25 ℃ unless otherwise noted)

Parameter		Symbol	Q1 Value	Q2 Value	Unit
Drain-Source Voltage		V_{DS}	60	-60	V
Gate-Source Voltage		V_{GS}	±20	±20	V
Continuous Drain Current		I_D	0.57	-0.35	A
Peak Drain Current	(Note 1)	I_{DM}	-1.2	-1.0	A
Power Dissipation	(Note 2)	P_D	500		mW
Thermal Resistance from Junction to Ambient	(Note 2)	$R_{\theta JA}$	250		℃/W
Operating and Storage Temperature Range		T_J ,T_{stg}	- 55 to + 150		℃

Note:

1. Pulse Test: Pulse Width≤100μs, Duty Cycle≤2%,Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.

2. Device mounted on FR-4 substrate PC board, 2oz copper with 1-inch^2 copper plate in still air.

Electrical Characteristics(T_A=25 ℃ unless otherwise specified)

N-Channel Q1

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Static						
Drain Source Breakdown Voltage	I_D=250μA	$V_{(BR)DSS}$	60	-	-	V
Zero Gate Voltage Drain Current	V_{DS}=48V	I_{DSS}	-	-	1	μA
Gate Source Leakage Current	V_{GS}=±20V	I_{GSS}	-	-	±10	μA
Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	$V_{GS(th)}$	0.8	-	1.5	V
Static Drain Source On-Resistance	V_{GS}=10V, I_D=0.5A	$R_{DS(on)}$	-	-	1.6	Ω
	V_{GS}=4.5V, I_D=0.2A		-	-	2.5	
	V_{GS}=2.5V, I_D=0.1A		-	-	4.5	
Dynamic						
Total Gate Charge	V_{DS}=25V, V_{GS}=4.5V, I_D=1A	Q_g	-	0.9	-	nC
Gate-Source Charge		Q_{gs}	-	0.5	-	
Gate-Drain Charge		Q_{gd}	-	0.3	-	
Input Capacitance	V_{DS}=25V, V_{GS}=0V, f=1MHz	C_{iss}	-	35.0	-	pF
Output Capacitance		C_{oss}	-	10.0	-	
Reverse Transfer Capacitance		C_{rss}	-	8.5	-	
Turn-On Delay Time	V_{DD}=30V, V_{GS}=10V, I_D=0.5A, R_g=25Ω	$t_{d(on)}$	-	3.8	-	ns
Turn-On Rise Time		t_r	-	3.4	-	
Turn-Off Delay Time		$t_{d(off)}$	-	19.0	-	
Turn-Off Fall Time		t_f	-	12.0	-	
Drain-Source Body Diode						
Drain-Source Diode Forward Voltage	V_{GS}=0V, I_S=0.5A	V_{SD}	-	-	1.3	V
Continuous Source Current	-	I_S	-	-	0.57	A

Electrical Characteristics(T_A=25 ℃ unless otherwise specified)

P-Channel Q2

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Static						
Drain Source Breakdown Voltage	I_D=-250μA	$V_{(BR)DSS}$	-60	-	-	V
Zero Gate Voltage Drain Current	V_{DS}=-48V	I_{DSS}	-	-	-1	μA
Gate Source Leakage Current	V_{GS}=±20V	I_{GSS}	-	-	±10	μA
Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250μA	$V_{GS(th)}$	-1.0	-	-2.5	V
Static Drain Source On-Resistance	V_{GS}=-10V, I_D=-0.2A V_{GS}=-5V, I_D=-0.1A	$R_{DS(on)}$	- -	- -	6.0 7.0	Ω
Dynamic						
Total Gate Charge	V_{DS}=-25V, V_{GS}=-4.5A, I_D=-0.1V	Q_g	-	1.1	-	nC
Gate-Source Charge		Q_{gs}	-	0.3	-	
Gate-Drain Charge		Q_{gd}	-	0.2	-	
Input Capacitance	V_{DS}=-25V, V_{GS}=0V, f=1MHz	C_{iss}	-	38	-	pF
Output Capacitance		C_{oss}	-	10	-	
Reverse Transfer Capacitance		C_{rss}	-	6	-	
Turn-On Delay Time	V_{DS}=-25V, V_{GS}=-10V, I_D=-0.1A, R_g=6.8Ω	$t_{d(on)}$	-	14.0	-	ns
Turn-On Rise Time		t_r	-	4.3	-	
Turn-Off Delay Time		$t_{d(off)}$	-	15.0	-	
Turn-Off Fall Time		t_f	-	76.0	-	
Drain-Source Body Diode						
Drain-Source Diode Forward Voltage	V_{GS}=0V, I_S=-0.5A	V_{SD}	-	-	-1.3	V
Continuous Source Current	-	I_S	-	-	-0.35	A

RATINGS AND CHARACTERISTIC CURVES
N-Channel Q1

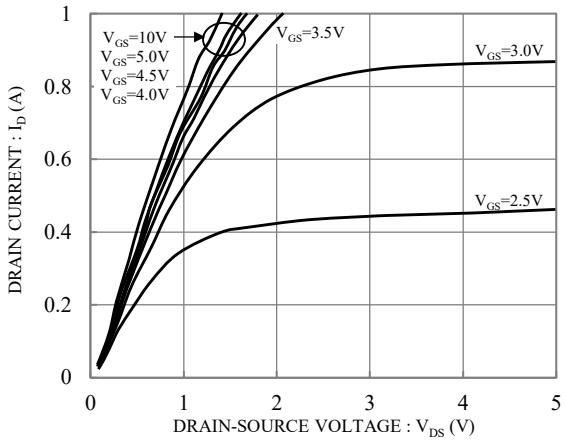


Fig.1 Typical Output Characteristics

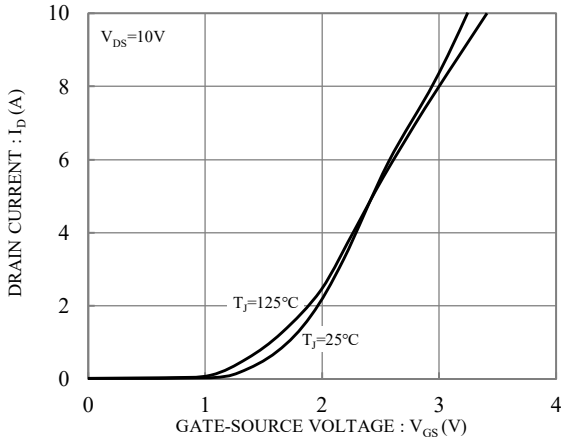


Fig.2 Typical Transfer Characteristics

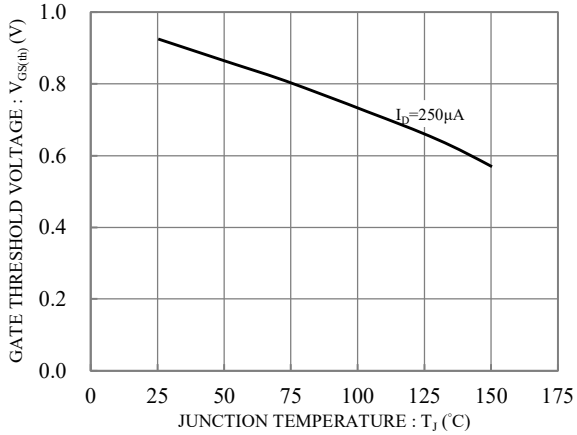


Fig.3 Gate Threshold Voltage vs. Junction Temperature

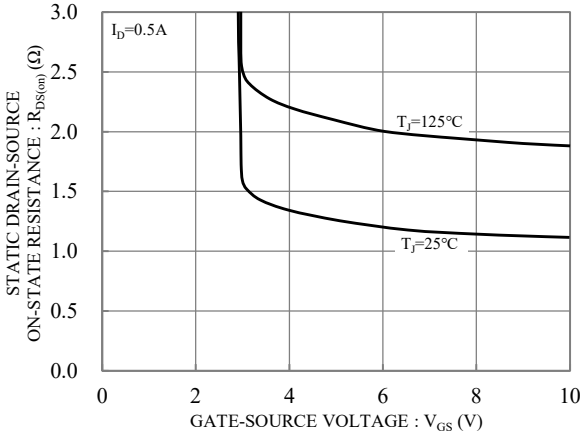


Fig.4 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

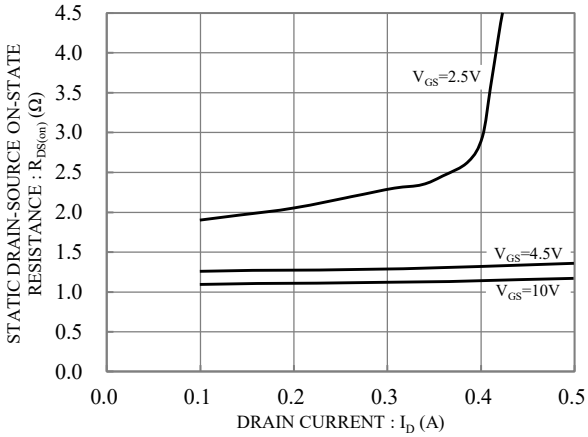


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

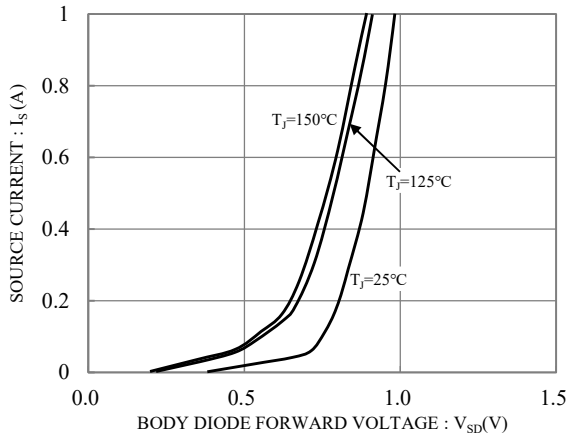


Fig.6 Body Diode Forward Voltage vs. Source Current

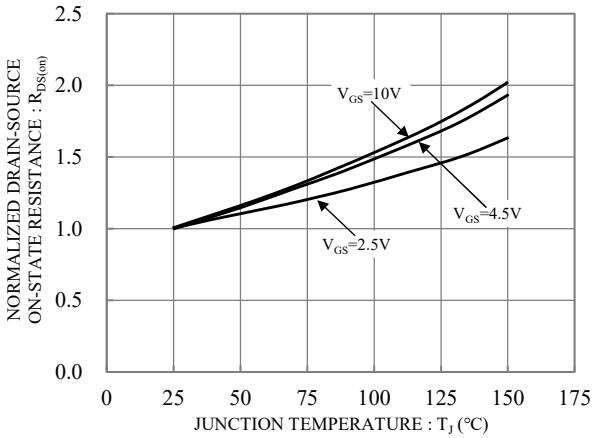


Fig.7 Drain-Source On-State Resistance vs. Junction Temperature

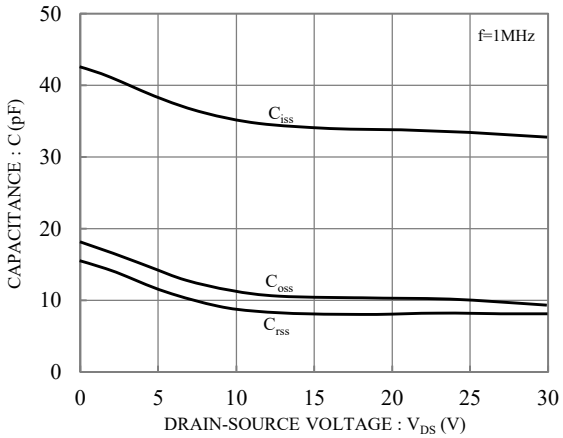


Fig.8 Capacitance vs. Drain-Source Voltage

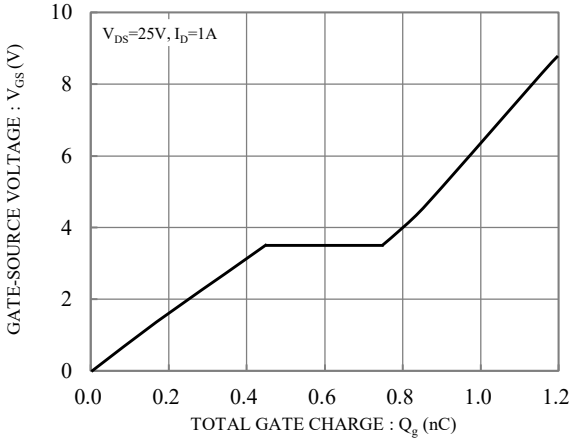


Fig.9 Gate Charge Characteristics

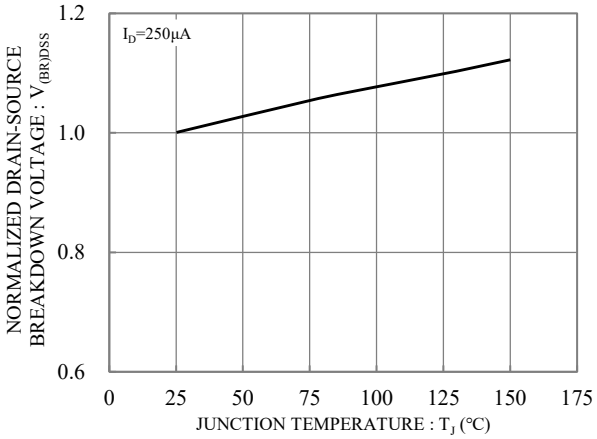


Fig.10 Breakdown Voltage vs. Junction Temperature

RATINGS AND CHARACTERISTIC CURVES
P-Channel Q2

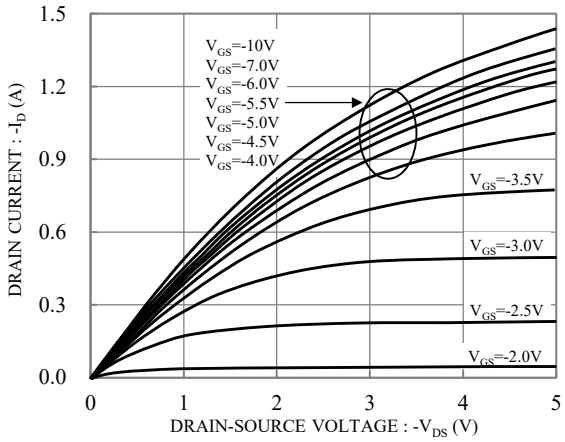


Fig.11 Typical Output Characteristics

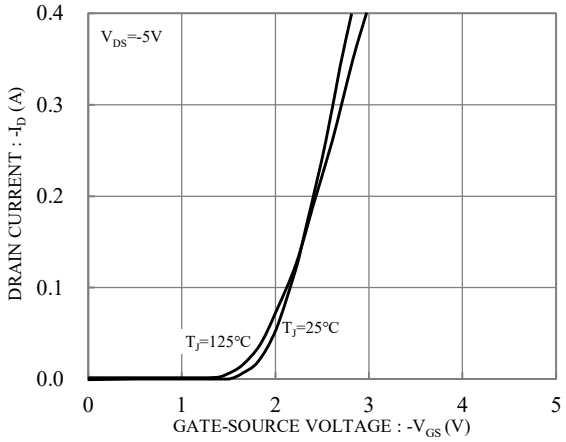


Fig.12 Typical Transfer Characteristics

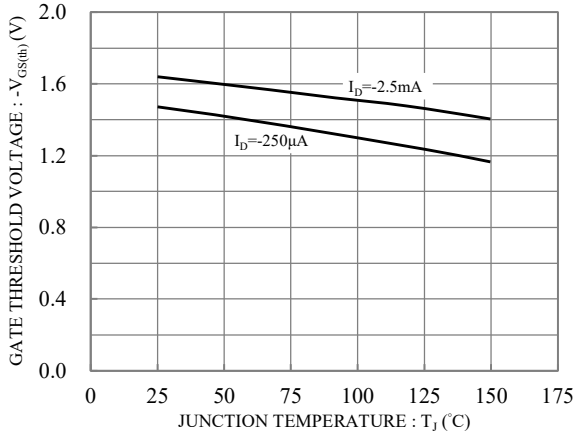


Fig.13 Gate Threshold Voltage vs. Junction Temperature

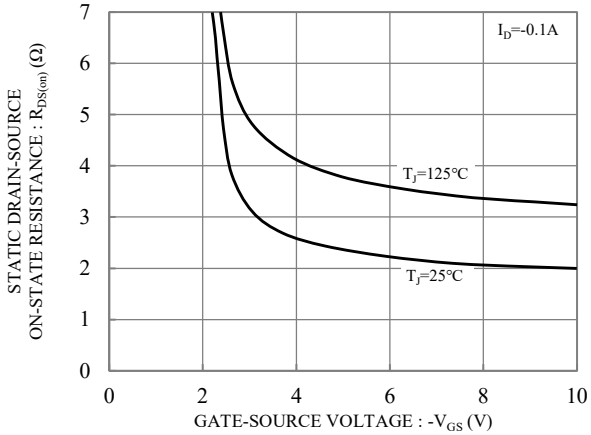


Fig.14 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

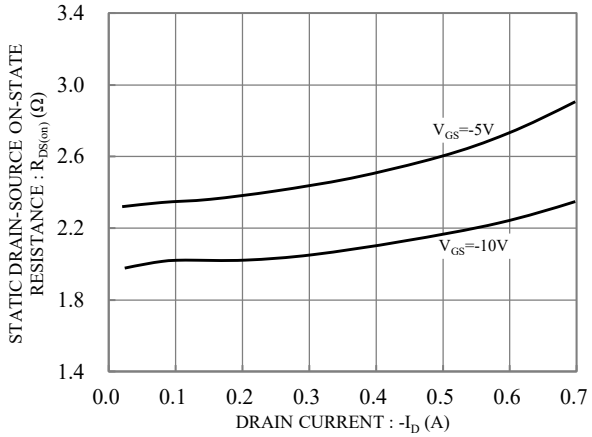


Fig.15 Static Drain-Source On-State Resistance vs. Drain Current

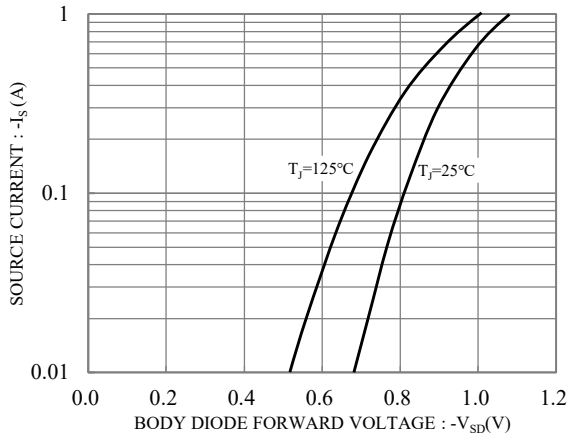


Fig.16 Body Diode Forward Voltage vs. Source Current

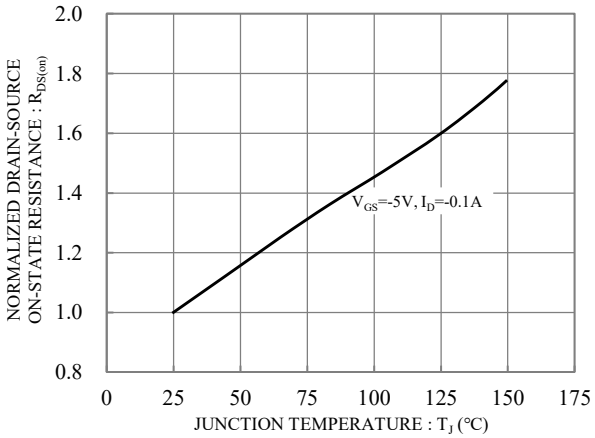


Fig.17 Drain-Source On-State Resistance vs. Junction Temperature

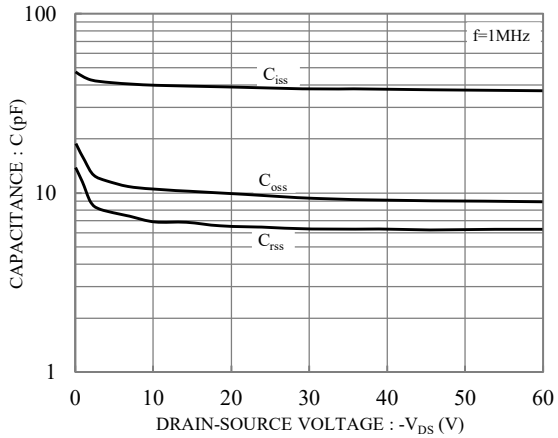


Fig.18 Capacitance vs. Drain-Source Voltage

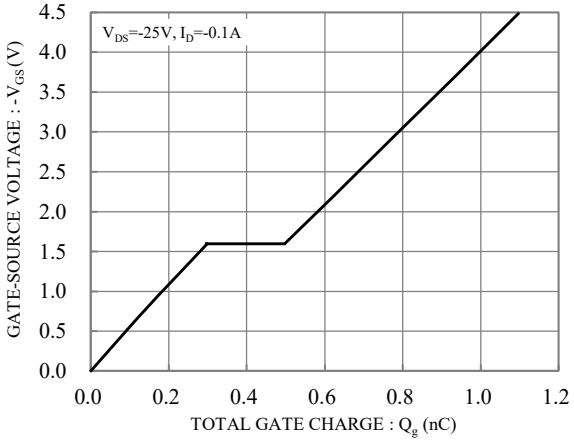


Fig.19 Gate Charge Characteristics

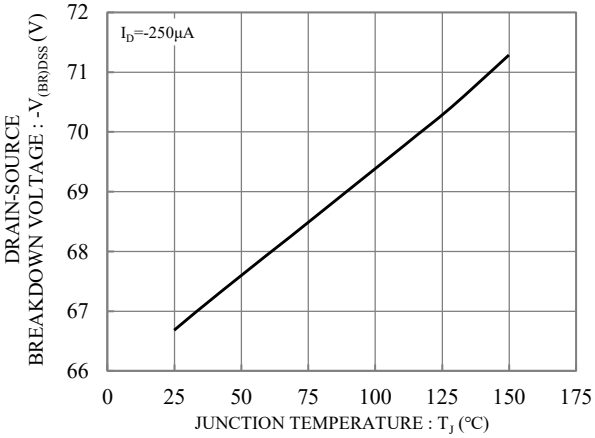
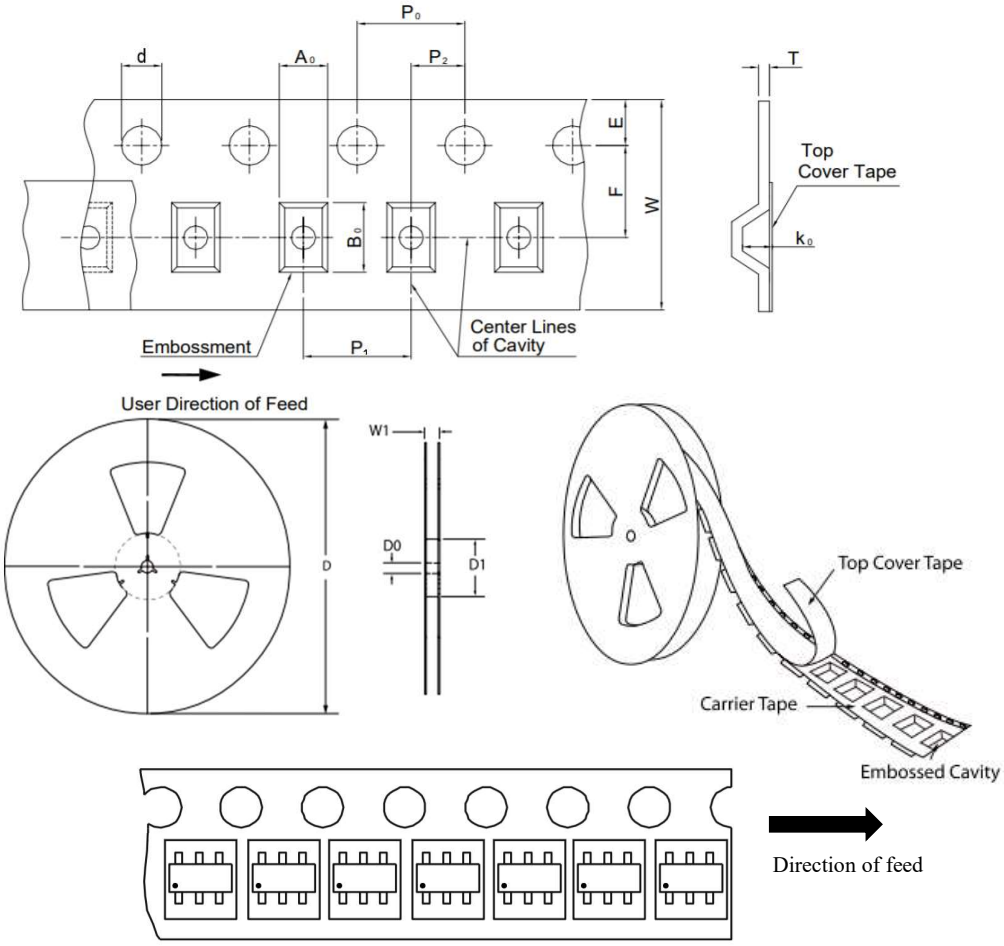


Fig.20 Breakdown Voltage vs. Junction Temperature

TAPE & REEL SPECIFICATION



Item	Symbol	SOT-563
Carrier width	A_0	1.80 ± 0.05
Carrier length	B_0	1.80 ± 0.05
Carrier depth	K_0	0.70 ± 0.05
Sprocket hole	d	1.50 ± 0.10
Reel outside diameter	D	178.00 ± 2.00
Feed hole width	D_0	13.00 ± 0.50
Reel inner diameter	D_1	MIN. 50.00
Sprocke hole position	E	1.75 ± 0.10
Punch hole position	F	3.50 ± 0.10
Sprocke hole pitch	P_0	4.00 ± 0.10
Punch hole pitch	P_1	4.00 ± 0.10
Embossment center	P_2	2.00 ± 0.10
Overall tape thickness	T	0.60 ± 0.05
Tape width	W	8.00 ± 0.30
Reel width	W1	MAX. 14.50

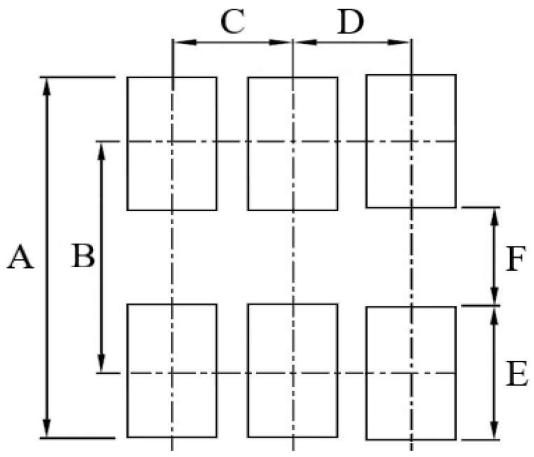
ORDER INFORMATION

Package	Reel Size	Quantity
SOT-563	7"	4,000

MARKING CODE

Part Number	Marking Code
SMX06C7KDTH	MJ

SUGGESTED SOLDER PAD LAYOUT



Unit : mm

PACKAGE	A	B	C	D	E	F
SOT-563	2.30	1.45	0.50	0.50	0.85	0.60