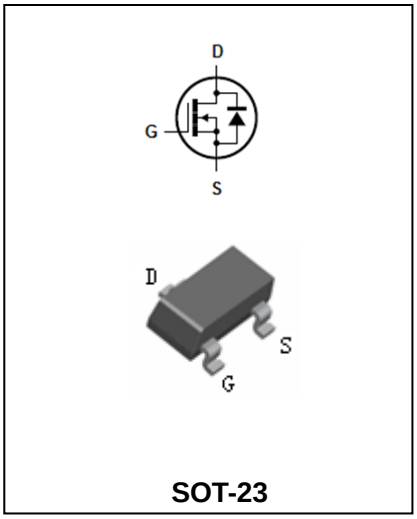
F605

Silicon N-Channel Power MOSFET

FEATURES

- N -channel
- ESD improved Capability.
- Depletion Mode
- Dv/dt rated



SOT-23

APPLICATIONS

- Line current interrupter in telephone sets
- Relay, high speed and line transformer drivers

ORDERING INFORMATION

Type No.	Marking	Package Code
F605	605	SOT-23

MAXIMUM RATING @ Ta=25℃ unless otherwise specified

Symbol	Parameter	Value	Units
V_{DSX}	Drain-to-Source voltage	600	V
V_{GS}	Gate -Source voltage	±20	V
I_D	Continuous Drain current Continuous Drain current Tc=70°C	0.030 0.024	A
I_{DM}[a1]	Pulsed Drain current	0.120	A
dv/dt[a2]	Peak Diode Recovery dv/dt	5.0	V/ns
P_D	Power Dissipation	0.5	W
$V_{ESD(G-S)}$	Gate source ESD(HBM-C=100pF,R=1.5kΩ)	300	V
T_J, T_{STG}	Operating Junction and StorageTemperature	150，-55 to +150	℃
T_L	Maximum Temperature for Soldering	300	℃

ELECTRICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

OFF Characteristics						
Parameter	**Symbol**	**Test conditions**	**MIN**	**TYP**	**MAX**	**UNIT**
Drain-Source Breakdown Voltage	V_{DSX}	V_{GS}=-5V,I_D=250μA	600	-	-	V
Off-State Drain-to-Source voltage	$I_{D(off)}$	V_{DS}=600V, V_{GS}=−5V	-	-	0.1	uA
Gate to Sourse Forward Leakage	$I_{GSS(F)}$	V_{GS}=20V	-	-	10	uA
Gate to Sourse ReverseLeakage	$I_{GSS\ (R)}$	V_{GS}=-20V	-	-	-10	μA

ON Characteristics						
Parameter	**Symbol**	**Test conditions**	**MIN**	**TYP**	**MAX**	**UNIT**
On-State Drain Current	I_{dss}	V_{DS}=25V, V_{GS}=0V	12	-	-	mA
Drain-to-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=0V, I_D=3mA	-	350	700	Ω
		V_{GS}=10V, I_D=16mA	-	-	800	
Gate-to-Source Cut-off Voltage	$V_{GS\ (OFF)}$	V_{DS}=3V, I_D=8.0uA	-2.7	-2	-1.0	V

Dynamic Characteristics						
Parameter	**Symbol**	**Test conditions**	**MIN**	**TYP**	**MAX**	**UNIT**
Forward Transconductance	gfs	V_{DS}=50V, I_D=0.01A	0.008	0.017	-	S
Input Capacitance	Ciss	V_{GS}=-5V, V_{DS}=25V,f=1.0MHz	-	50	-	pF
Output Capacitance	Coss		-	4.53	-	
Reserse Transfer Capacitance	Crss		-	-1.08	-	

Resistive Switching Characteristics						
Parameter	**Symbol**	**Test conditions**	**MIN**	**TYP**	**MAX**	**UNIT**
Turn-on Delay Time	$t_{d(ON)}$	I_D=0.01A,V_{DD}=300 V, V_{GS}=-5…7V, R_G=6.0Ω	-	9.9	-	ns
Rose Time	tr		-	55.8	-	
Turn-Off Delay Time	$t_{d(OFF)}$		-	56.4	-	
Fall Time	tf		-	136	-	

Total Gate Charge	Qg	I_D=0.01A,V_{DD}=400 V, V_{GS}=-5 to 5V	-	1.14		nC
Gate to Source Charge	Qgs		-	0.5		
Gate to Drain (“Miller”) Charge	Qgd		-	0.37		

Source-Drain Diode Characteristics

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Continuous Source Current(Body Diode)	I_S	Ta=25℃	-	-	0.025	A
Maximum Pulsed Current(Body Diode))	I_{SM}		-	-	0.100	A
Diode Forward Voltage	V_{SD}	I_F=16mA, V_{GS}=-5V	-		1.2	V
Reserse Recovery Time	trr	I_F=0.01A, Tj=25℃, dI_F/dt=100A/us, V_R=300V	-	243	-	ns
Reserse Recovery Charge	Qrr		-	636	-	nC

Parameter	Symbol	TYP	UNIT
Junction-to-Ambient	$R_{\theta JA}$	250	℃/W

Gate –source Zener Diode

Parameter	Symbol	Test conditions	Rating			UNIT
			MIN	TYP	MAX	
Gate-source breakdown voltage	V_{GSO}	IGS=±1mA(Open Drain)	20	-	-	V

The built-in-back-to-back Zener diodes have specifically been designed to enhance not only the device’s ESD capability,but also to make them safely absorb possible voltage transients that may occasionally be applied from gate to source. In this respect the Zener voltage is appropriate to achieve an efficient and cost-effective intervention to protect the device’s integrity. These integrated Zener diodes thus avoid the usage of external components.

a1: Repetitive rating; pulse width limited by maximum junction temperature

a2: IF=0.01A,di/dt≤100A/us,V_{DD}≤BV_{DS},Start Tj=25℃

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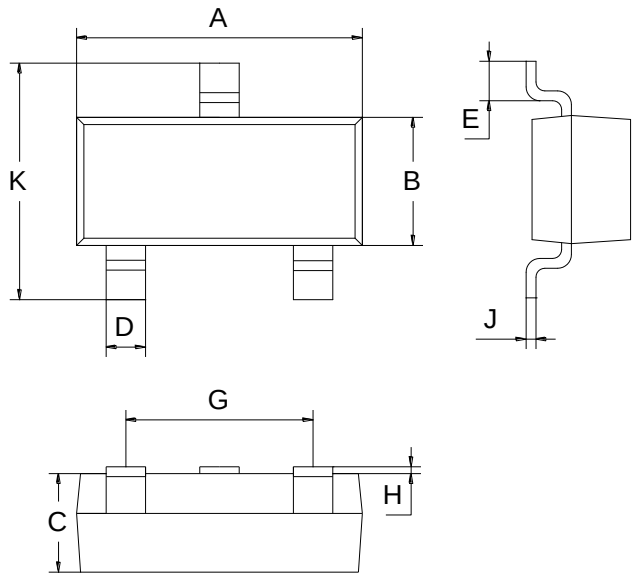
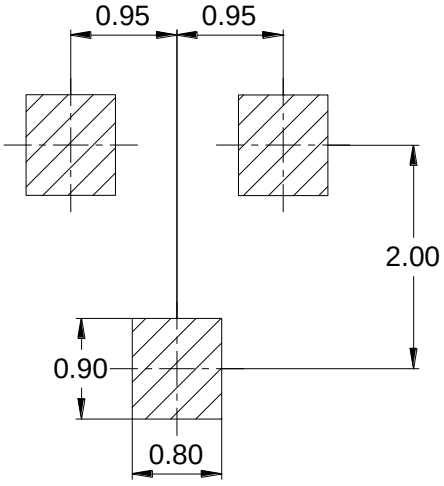
PACKAGE OUTLINE

Plastic surface mounted package SOT-23



SOT-23		
Dim	Min	Max
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60
All Dimensions in mm		

SOLDERING FOOTPRINT



Unit: mm

PACKAGE INFORMATION

Device	Package	Shipping
F605	SOT-23	3000pcs / Tape & Reel