

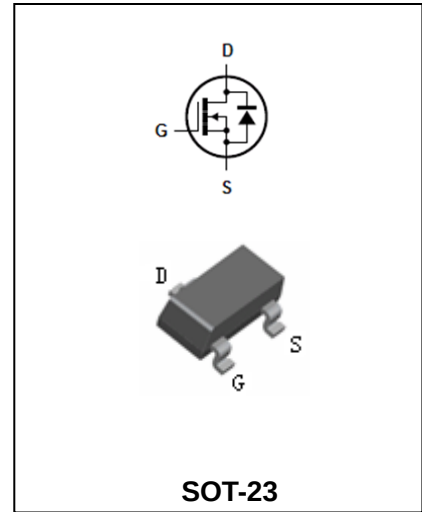
Silicon N-Channel Power MOSFET

F605

FEATURES

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

HF



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°C 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 $T_c=70^\circ\text{C}$	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=1.5k Ω)	300	V
T_J, T_{STG}	Operating Junction and StorageTemperature	150, -55 to +150	$^\circ\text{C}$
T_L	Maximum Temperature for Soldering	300	$^\circ\text{C}$

Silicon N-Channel Power MOSFET

F605

ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

OFF Characteristics

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Drain-Source Breakdown Voltage	V_{DSX}	$V_{GS}=-5V, I_D=250\mu A$	600	-	-	V
Off-State Drain-to-Source voltage	$I_{D(off)}$	$V_{DS}=600V, V_{GS}=-5V$	-	-	0.1	μA
Gate to Source Forward Leakage	$I_{GSS(F)}$	$V_{GS}=20V$	-	-	10	μA
Gate to Source Reverse Leakage	$I_{GSS(R)}$	$V_{GS}=-20V$	-	-	-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	$V_{GS(OFF)}$	$V_{DS}=3V, I_D=8.0\mu A$	-2.7	-2	-1.0	V

Dynamic Characteristics

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Forward Transconductance	g_{fs}	$V_{DS}=50V, I_D=0.01A$	0.008	0.017	-	S
Input Capacitance	C_{iss}	$V_{GS}=-5V, V_{DS}=25V, f=1.0MHz$	-	50	-	pF
Output Capacitance	C_{oss}		-	4.53	-	
Reverse Transfer Capacitance	C_{rss}		-	-1.08	-	

Resistive Switching Characteristics

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Turn-on Delay Time	$t_{d(ON)}$	$I_D=0.01A, V_{DD}=300V, V_{GS}=-5\sim 7V, R_G=6.0\Omega$	-	9.9	-	ns
Rise Time	t_r		-	55.8	-	
Turn-Off Delay Time	$t_{d(OFF)}$		-	56.4	-	
Fall Time	t_f		-	136	-	

Silicon N-Channel Power MOSFET

F605

Total Gate Charge	Qg	$I_D=0.01A, V_{DD}=400V, V_{GS}=-5 \text{ to } 5V$	-	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	$T_a=25^\circ C$	-	-	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	$I_F=0.01A, T_j=25^\circ C, dI_F/dt=100A/\mu s, V_R=300V$	-	243	-	ns
Reserse Recovery Charge	Qrr		-	636	-	nC

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

Gate –source Zener Diode

Parameter	Symbol	Test conditions	Rating			UNIT
			MIN	TYP	MAX	
Gate-source breakdown voltage	V_{GSO}	$I_{GS}=\pm 1mA(\text{Open Drain})$	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: $I_F=0.01A, di/dt \leq 100A/\mu s, V_{DD} \leq BV_{DS}, \text{Start } T_j=25^\circ C$

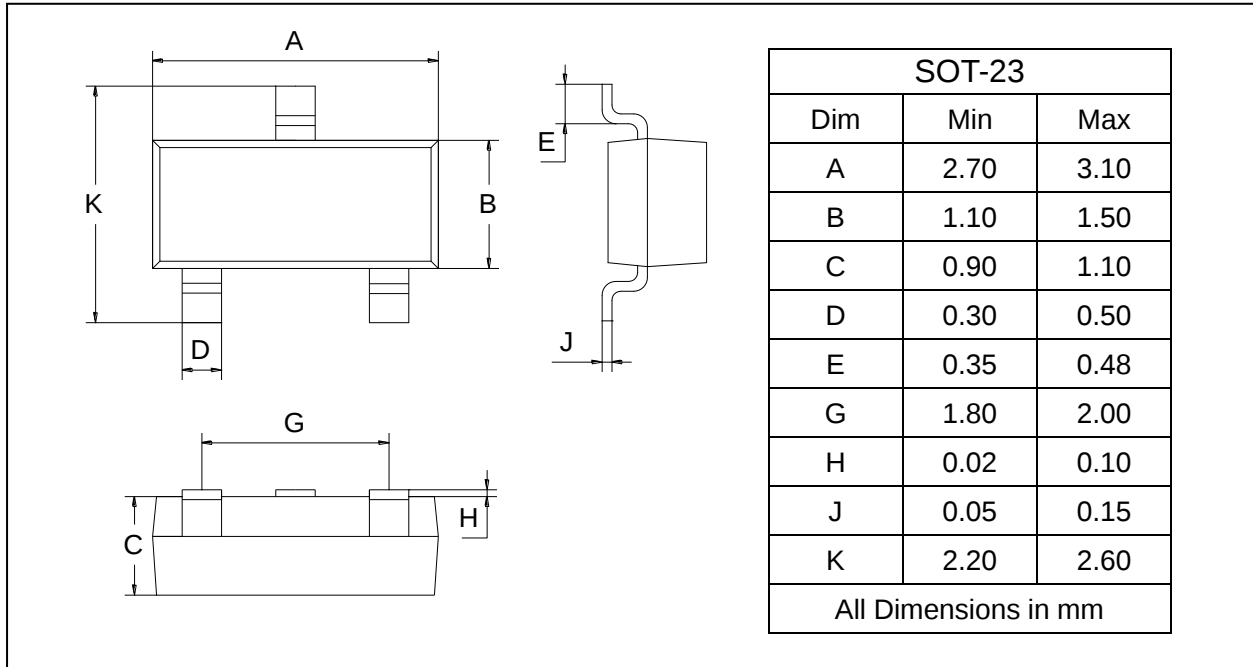
Silicon N-Channel Power MOSFET

F605

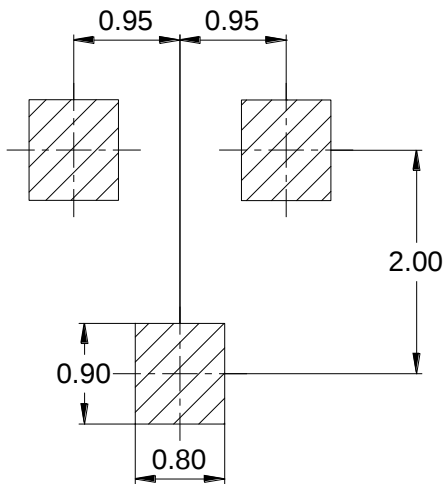
PACKAGE OUTLINE

Plastic surface mounted package

SOT-23



SOLDERING FOOTPRINT



PACKAGE INFORMATION

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