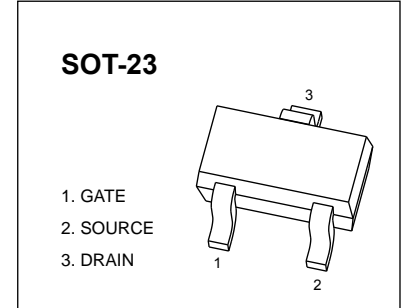


1012 N-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
20V	700mΩ@4.5V	500mA
	850mΩ@2.5V	



General Description

This Single N-Channel MOSFET has been designed using advanced Power Trench process to optimize the $R_{DS(ON)}$.

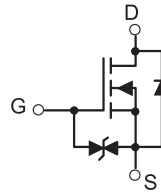
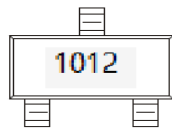
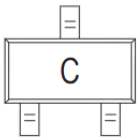
FEATURE

- High-Side Switching
- Low On-Resistance
- Low Threshold
- Fast Switching Speed
- ESD protected

APPLICATIONS

- Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Cell Phones, Pagers

MARKING



Equivalent Circuit

Maximum ratings ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GS}	± 12	
Drain Current-Continuous	$I_{D(DC)}$	500	mA
Drain Current -Pulsed(note1)	$I_{DM(pulse)}$	1000	
Power Dissipation (note 2 , $T_a=25^\circ\text{C}$)	P_D	150	mW
Maximum Power Dissipation (note 3 , $T_c=25^\circ\text{C}$)		275	
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	833	$^\circ\text{C/W}$
Thermal Resistance from Junction to Case	$R_{\theta JC}$	455	
Operation Junction and Storage Temperature Range	T_J, T_{stg}	-55 ~ +150	$^\circ\text{C}$

T_a=25 °C unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
On/Off States						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =250μA	20			V
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.45	0.8	1.2	
Gate-Body Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±4.5V			±1	μA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =16V, V _{GS} =0V			100	nA
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =600mA		250	700	mΩ
		V _{GS} =2.5V, I _D =500mA		330	850	
Forward Transconductance	g _{FS}	V _{DS} =10V, I _D =400mA		1		S
Dynamic Characteristics						
Input Capacitance (note 4)	C _{iss}	V _{DS} =16V, V _{GS} =0V, f =1MHz		100		pF
Output Capacitance (note 4)	C _{oss}			16		
Reverse Transfer Capacitance (note 4)	C _{rss}			12		
Total Gate Charge	Q _g	V _{DS} =10V, V _{GS} =4.5V, I _D =250mA		750		nC
Gate-Source Charge	Q _{gs}			75		
Gate-Drain Charge	Q _{gd}			225		
Switching Times (note 4)						
Turn-On Delay Time	t _{d(on)}	V _{DD} =10V, R _L =47Ω, I _D =200mA, V _{GS} =4.5V, R _G =10Ω		5		nS
Rise Time	t _r			5		
Turn-Off Delay Time	t _{d(off)}			25		
Fall Time	t _f			11		
Drain-Source Diode Characteristics						
Drain-Source Diode Forward Voltage (note 5)	V _{SD}	I _S =0.15A, V _{GS} = 0V			1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. This test is performed with no heat sink at T_a=25°C.
3. This test is performed with infinite heat sink at T_c=25°C.
4. These parameters have no way to verify.
5. Pulse Test : Pulse Width≤300μs, Duty Cycle≤0.5%.

