

SOT-89 Plastic-Encapsulate MOSFETS

P-Channel 20-V(D-S) MOSFET

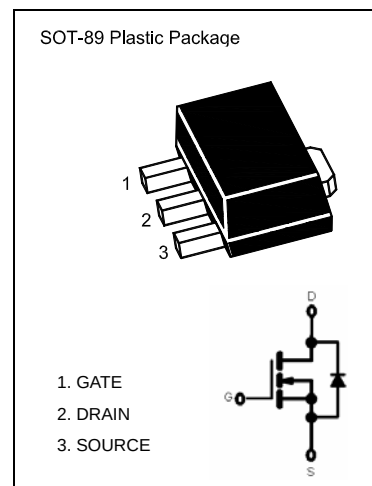
FEATURE

TrenchFET Power MOSFET

APPLICATIONS

- Load Switch for Portable Devices
- DC/DC Converter

MARKING: S1



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 8	
Continuous Drain Current	I_D	-2.3	A
Pulsed Drain Current	I_{DM}	-10	
Continuous Source-Drain Diode Current	I_S	-0.72	
Maximum Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient($t \leq 5s$)	$R_{\theta JA}$	357	$^{\circ}\text{C/W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-55 ~+150	

Electrical characteristics (T_a=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Static						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-20			V
Gate-source threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = -250μA	-0.4		-1	
Gate-source leakage	I _{GSS}	V _{DS} =0V, V _{GS} =±8V			±100	nA
Zero gate voltage drain current	I _{DSS}	V _{DS} = -20V, V _{GS} =0V			-1	μA
Drain-source on-state resistance ^a	R _{DS(on)}	V _{GS} = -4.5V, I _D = -2.8A		0.090	0.112	Ω
		V _{GS} = -2.5V, I _D = -2.0A		0.110	0.142	
Forward transconductance ^a	g _{fs}	V _{DS} = -5V, I _D = -2.8A		6.5		S
Dynamic ^b						
Input capacitance	C _{iSS}	V _{DS} = -10V, V _{GS} =0V, f =1MHz		405		pF
Output capacitance	C _{oSS}			75		
Reverse transfer capacitance	C _{rSS}			55		
Total gate charge	Q _g	V _{DS} = -10V, V _{GS} = -4.5V, I _D = -3A		5.5	10	nC
		V _{DS} = -10V, V _{GS} = -2.5V, I _D = -3A		3.3	6	
Gate-source charge	Q _{gs}			0.7		
Gate-drain charge	Q _{gd}			1.3		
Gate resistance	R _g	f =1MHz		6.0		Ω
Turn-on delay time	t _{d(on)}	V _{DD} = -10V, R _L =10Ω, I _D = -1A, V _{GEN} = -4.5V, R _g =1Ω		11	20	ns
Rise time	t _r			35	60	
Turn-off delay time	t _{d(off)}			30	50	
Fall time	t _f			10	20	
Drain-source body diode characteristics						
Continuous source-drain diode current	I _S	T _C =25°C			-1.3	A
Pulse diode forward current ^a	I _{SM}				-10	
Body diode voltage	V _{SD}	I _S = -0.7A		-0.8	-1.2	V

Notes :

a. Pulse Test : Pulse Width < 300μs, Duty Cycle ≤ 2%.

b. Guaranteed by design, not subject to production testing.

Typical Characteristics

BC2301U

