

SOT-23 Plastic-Encapsulate MOSFETS

N-Channel 30-V(D-S) MOSFET

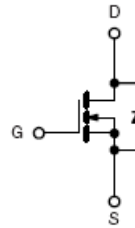
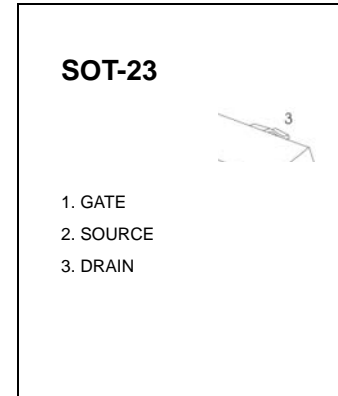
FEATURE

TrenchFET Power MOSFET

APPLICATIONS

- Load Switch for Portable Devices
- DC/DC Converter

MARKING: 2304



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current	I_D	3.3	A
Pulsed Drain Current	I_{DM}	15	
Continuous Source-Drain Diode Current	I_S	0.9	
Maximum Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient ($t \leq 5s$)	$R_{\theta JA}$	357	$^{\circ}\text{C}/\text{W}$
Storage Temperature	T_J	150	$^{\circ}\text{C}$
Junction 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	30			V	
Gate-source threshold voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.2		2.2		
Gate-body leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V			±100	nA	
Zero gate voltage drain current	I _{DSS}	V _{DS} = 30V, V _{GS} = 0V			1	μA	
Drain-source on-state resistance ^a	R _{DS(on)}	V _{GS} = 10V, I _D = 3.2A		0.049	0.060	Ω	
		V _{GS} = 4.5V, I _D = 2.8A		0.061	0.075		
Forward transconductance ^a	g _{fs}	V _{DS} = 4.5V, I _D = 2.5A	2.5			S	
Dynamic^b							
Total gate charge	Q _g	V _{DS} = 15V, V _{GS} = 10V, I _D = 3.4A		4.5	6.7	nC	
					2.1		3.2
Gate-source charge	Q _{gs}	V _{DS} = 15V, V _{GS} = 4.5V, I _D = 3.4A		0.85			
Gate-drain charge	Q _{gd}			0.65			
Gate resistance	R _g	f = 1.0MHz	0.8	4.4	8.8	Ω	
Input capacitance	C _{iss}	V _{DS} = 15V, V _{GS} = 0V, f = 1MHz		235		pF	
Output capacitance	C _{oss}			45			
Reverse transfer capacitance	C _{rss}			17			
Turn-on delay Time	t _{d(on)}	V _{DD} = 15V, R _L = 5.6Ω, I _D ≈ 2.7A, V _{GEN} = 4.5V, R _g = 1Ω		12	20	ns	
Rise time	t _r			50	75		
Turn-off delay time	t _{d(off)}			12	20		
Fall time	t _f			22	35		
Turn-on delay time	t _{d(on)}	V _{DD} = 15V, R _L = 5.6Ω, I _D ≈ 2.7A, V _{GEN} = 10V, R _g = 1Ω		5	10	ns	
Rise time	t _r			12	20		
Turn-off delay time	t _{d(off)}			10	15		
Fall time	t _f			5	10		
Drain-source body diode characteristics							
Continuous source-drain diode current	I _S	T _C = 25°C			1.4	A	
Pulse diode forward current	I _{SM}				15	A	
Body diode voltage	V _{SD}	I _S = -2.7A, V _{GS} = 0V		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

BC2304

