

SOT-23 Plastic-Encapsulate MOSFETS

LJ2333PT1G

P-Channel 12V(D-S) MOSFET

DESCRIPTION

The LJ2333 uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge. This device is suitable for use in PWM, load switching and general purpose applications.

FEATURE

- TrenchFET Power MOSFET

APPLICATION

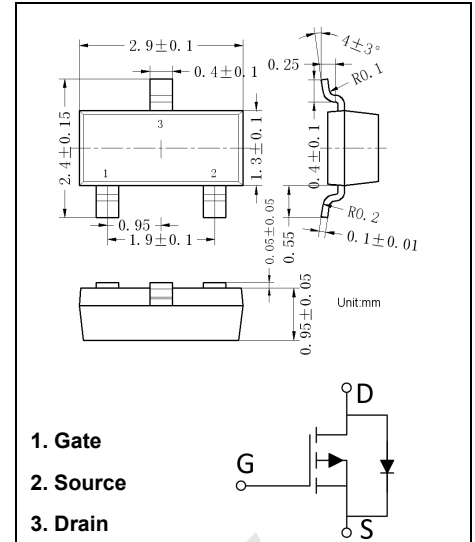
- DC/DC Converter
- Load Switch for Portable Devices
- Battery Switch

MARKING: A5

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-12	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current	I_D	-6 ^a	A
Pulsed Drain Current ($t=300\mu\text{s}$)	I_{DM}	-20	A
Power Dissipation	P_D	0.35 ^b	W
		1.1 ^a	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	357 ^b	$^\circ\text{C/W}$
		113 ^a	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$

- a. Device mounted on FR-4 substrate board, with minimum recommended pad layout, single side.
b. Device mounted on no heat sink.



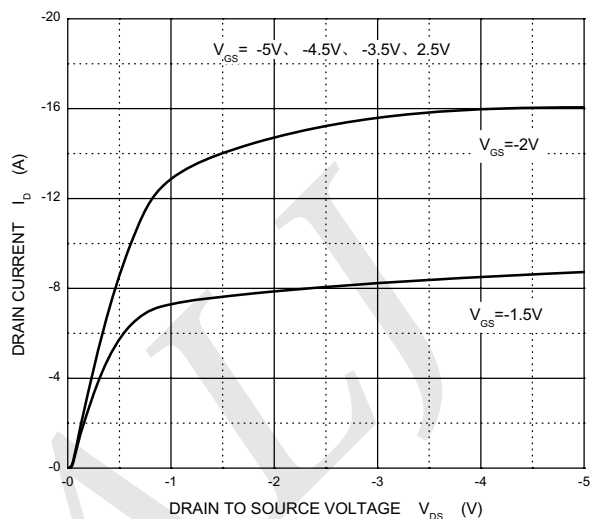
ELECTRICAL CHARACTERISTICS($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
V _{(BR)DSS}	Drain-source breakdown voltage	V _{GS} = 0V, I _D =-250μA	-12			V
I _{DSS}	Zero gate voltage drain current	V _{DS} =-12V,V _{GS} = 0V			-1	μA
I _{GSS}	Gate-body leakage current	V _{GS} =±8V, V _{DS} = 0V			±0.1	μA
V _{GS(th)}	Gate threshold voltage (note 1)	V _{DS} =V _{GS} , I _D =-250μA	-0.4		-1	V
R _{DS(on)}	Drain-source on-resistance (note 1)	V _{GS} =-4.5V, I _D =-5A			28	mΩ
		V _{GS} =-3.7V, I _D =-4.6A			32	
		V _{GS} =-2.5V, I _D =-4.3A			40	
		V _{GS} =-1.8V, I _D =-1A			63	
		V _{GS} =-1.5V, I _D =-0.5A			150	
g _{FS}	Forward tranconductance (note 1)	V _{DS} =-5V, I _D =-5A		18		S
Dynamic characteristics (note 2)						
C _{iss}	Input Capacitance	V _{DS} =-6V,V _{GS} =0V,f =1MHz		1275		pF
C _{oss}	Output Capacitance			255		pF
C _{rss}	Reverse Transfer Capacitance			236		pF
R _g	Gate resistance	f =1MHz	1.9		19	Ω
Q _g	Total Gate Charge	V _{DS} =-6V,V _{GS} =-4.5V,I _D =-5A		14	21	nC
Q _{gs}	Gate-Source Charge			2.3		nC
Q _{gd}	Gate-Drain Charge			3.6		nC
t _{d(on)}	Turn-on delay time	V _{DD} =-6V,V _{GEN} =-4.5V,I _D =-4A R _L =6Ω,R _{GEN} =1Ω		26	40	ns
t _r	Turn-on rise time			24	40	ns
t _{d(off)}	Turn-off delay time			45	70	ns
t _f	Turn-off fall time			20	35	ns
Source-Drain Diode characteristics						
I _S	Diode forward current	T _C =25°C			-1.4	A
I _{SM}	Diode pulsed forward current				-20	A
V _{DS}	Diode Forward voltage (note 1)	V _{GS} =0V, I _S =-4A			-1.2	V
t _{rr}	Diode reverse recovery time (note 2)	I _F =-4A,dI/dt=100A/μs		24	48	ns
Q _{rr}	Diode reverse recovery charge (note 2)			8	16	nC

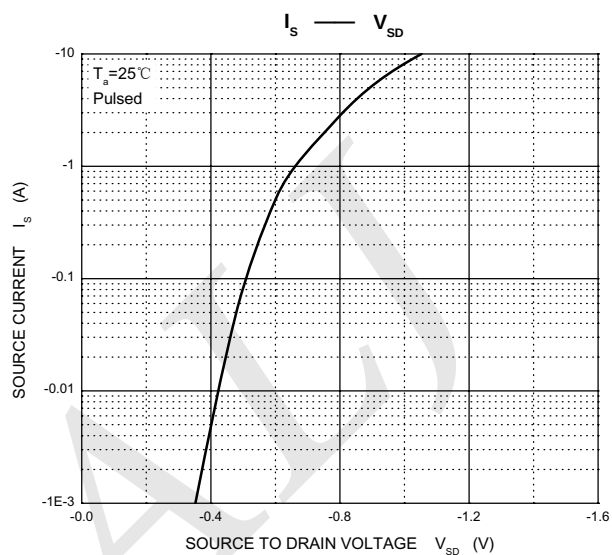
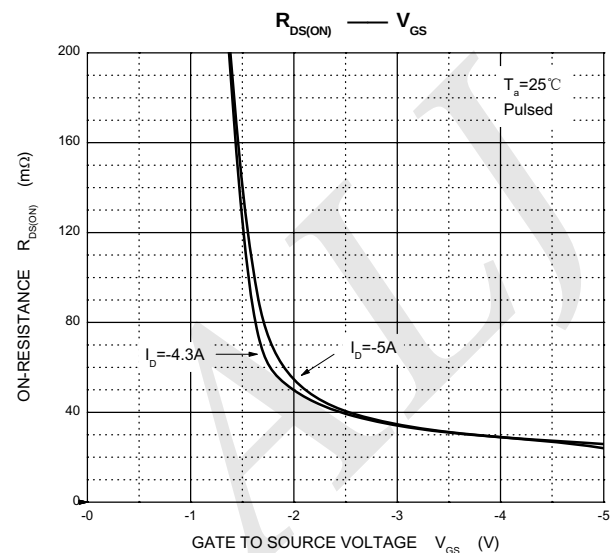
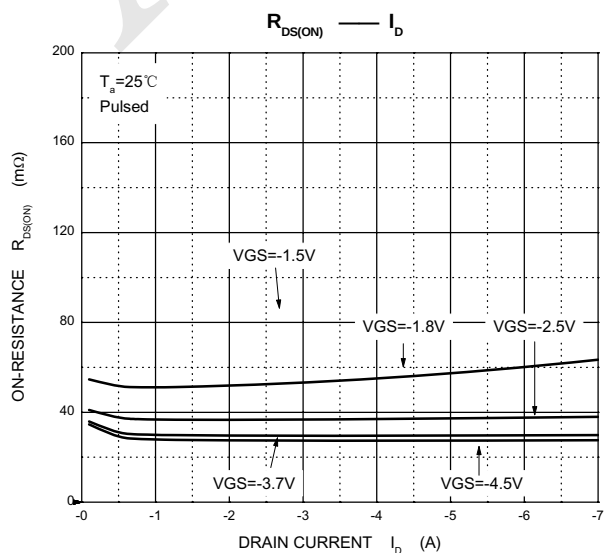
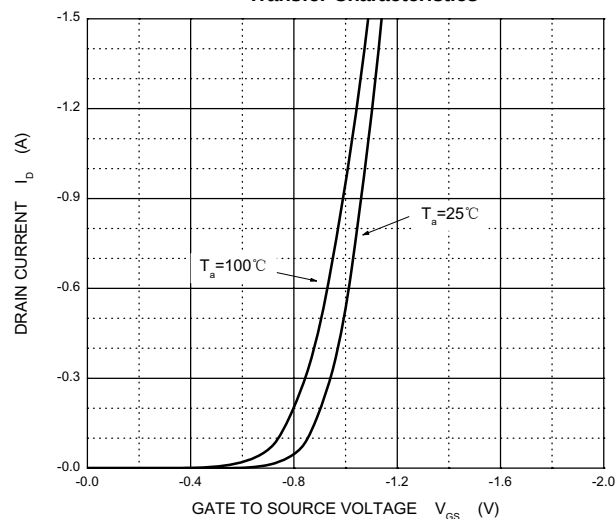
- Notes :**
1. Pulse test; pulse width $\leq 300\mu s$, duty cycles $\leq 2\%$.
 2. Guaranteed by design, not subject to production testing.

Typical Characteristics

Output Characteristics



Transfer Characteristics



Threshold Voltage

