



SI2333

Features

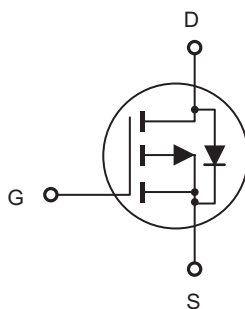
- Halogen free available upon request by adding suffix "-HF"
- TrenchFET Power Mosfet
- Excellent $R_{DS(ON)}$
- Marking Code: S33
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

Maximum Ratings @ 25 °C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-source Voltage	-12	V
I_D	Drain Current-Continuous ⁽¹⁾	-6	A
I_{DM}	Drain Current-Pulsed	-20	A
V_{GS}	Gate-source Voltage	± 8	V
P_D	Total Power Dissipation	0.35 ⁽²⁾	W
		1.1 ⁽¹⁾	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	357 ⁽²⁾	°C/W
		113 ⁽¹⁾	°C/W
T_J	Operating Junction Temperature	-55 to +150	°C
T_{STG}	Storage Temperature	-55 to +150	°C

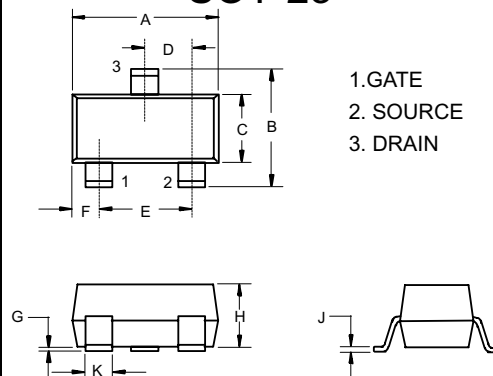
NOTE 1. Device mounted on FR-4 substrate board, with minimum recommended pad layout, single side.
2. Device mounted on no heat sink.

Internal Block Diagram



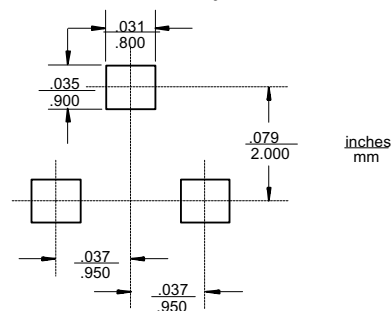
P-Channel Enhancement Mode Field Effect Transistor

SOT-23



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.110	.120	2.80	3.04	
B	.083	.104	2.10	2.64	
C	.047	.055	1.20	1.40	
D	.035	.041	.89	1.03	
E	.070	.081	1.78	2.05	
F	.018	.024	.45	.60	
G	.0005	.0039	.013	.100	
H	.035	.044	.89	1.12	
J	.003	.007	.085	.180	
K	.015	.020	.37	.51	

Suggested Solder Pad Layout



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

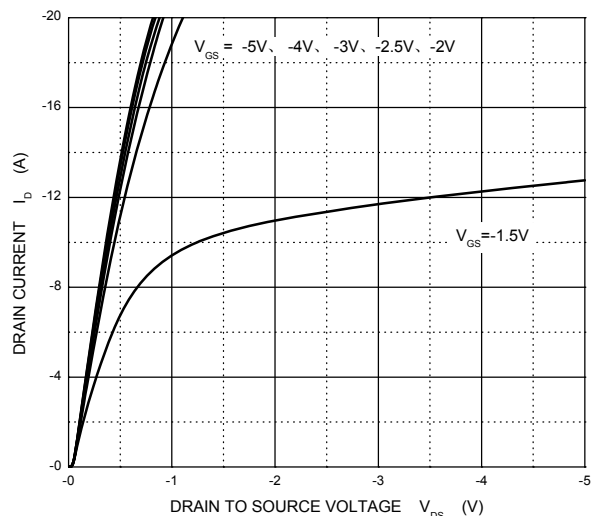
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D =-250μA	-12			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =-12V,V _{GS} = 0V			-1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±8V, V _{DS} = 0V			±0.1	
Gate threshold voltage (note 3)	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-0.4		-1	V
Drain-source on-resistance (note 4)	R _{DS(on)}	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	
Forward tranconductance (note 3)	g _{FS}	V _{DS} =-5V, I _D =-5A		18		S
Dynamic characteristics (note 4)						
Input Capacitance	C _{iSS}	V _{DS} =-6V,V _{GS} =0V,f =1MHz		1275		pF
Output Capacitance	C _{oSS}			255		pF
Reverse Transfer Capacitance	C _{rSS}			236		pF
Gate resistance	R _g	f =1MHz	1.9		19	Ω
Total Gate Charge	Q _g	V _{DS} =-6V,V _{GS} =-4.5V,I _D =-5A		14	2	nC
Gate-Source Charge	Q _{gs}			2.3		nC
Gate-Drain Charge	Q _{gd}			3.6		nC
Turn-on delay time	t _{d(on)}	V _{DD} =-6V,V _{GEN} =-4.5V,I _D =-4A R _L =6Ω,R _{GEN} =1Ω		26	4	ns
Turn-on rise time	t _r			24	4	ns
Turn-off delay time	t _{d(off)}			45	7	ns
Turn-off fall time	t _f			20	3	ns
Source-Drain Diode characteristics						
Diode forward current	I _S	T _C =25°C			-1.4	A
Diode pulsed forward current	I _{SM}				-20	A
Diode Forward voltage (note 3)	V _{DS}	V _{GS} =0V, I _S =-4A			-1.2	V
Diode reverse recovery time (note 4)	t _{rr}	I _F =-4A,dI/dt=100A/μs		24	48	ns
Diode reverse recovery charge (note 4)	Q _{rr}			8	16	nC

Notes : 3. Pulse test; pulse width ≤ 300μs, duty cycles ≤ 2%.

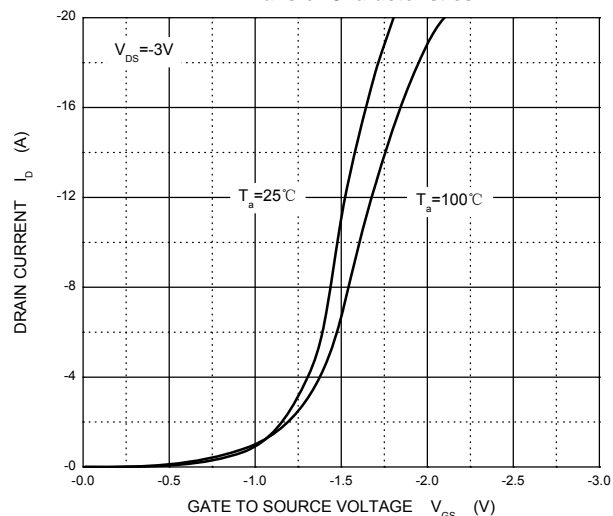
4. Guaranteed by design, not subject to production testing.

Typical Characteristics

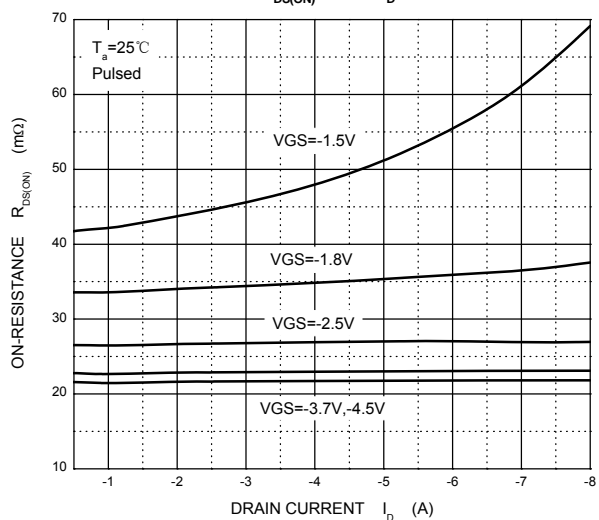
Output Characteristics



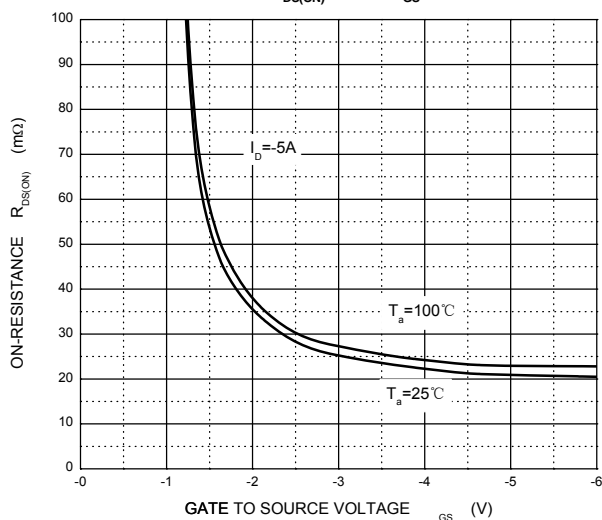
Transfer Characteristics



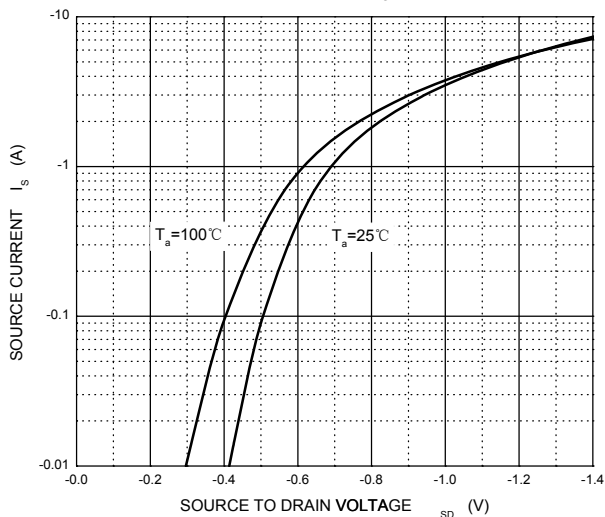
$R_{DS(ON)}$ — I_D



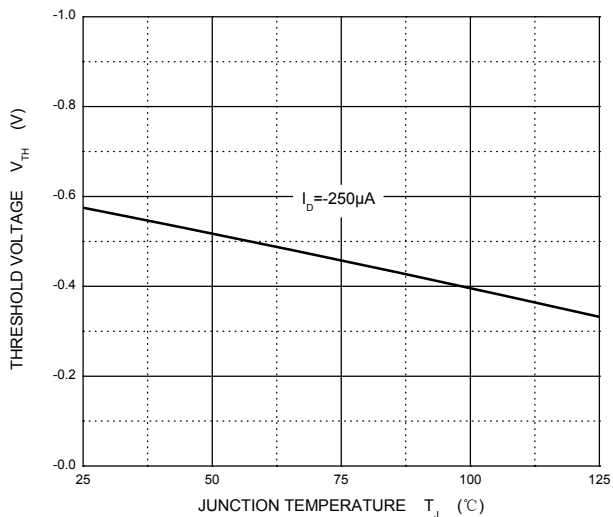
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



Threshold Voltage





Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

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