

P-Channel MOSFET

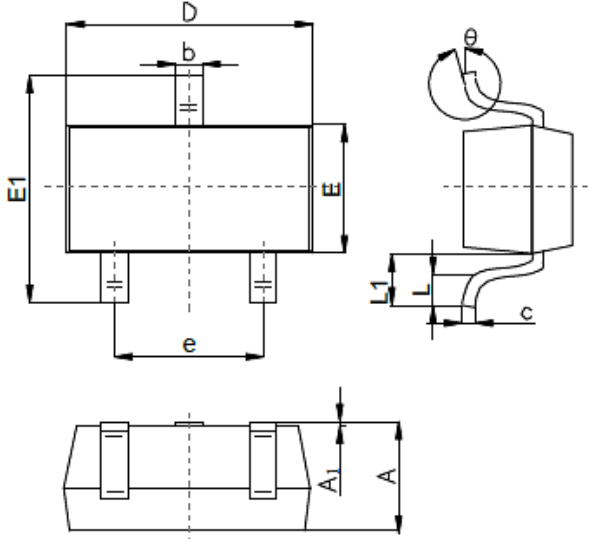
Primary characteristics			
Symbol	Parameter	Value	Unit
I_D	Continuous drain current (@ $T_a=25^\circ\text{C}$)	-200	mA
V_{DDs}	Drain source voltage	-60	V

Features

- SOT-23 case,
- Trench Power LV MOSFET technology,
- Low $R_{DS(ON)}$,
- Low Gate Charge,
- ESD Protected up to 2kV (HBM)

Application

- Video monitor,
- Power management

Case dimensions											
											
SOT-23											
Dim.	A	A1	b	c	D	E	E1	e	L	L1	θ
Min	0.65	0.00	0.30	0.08	2.70	1.15	2.10	1.70	0.15	0.35	0°
Max	1.40	0.20	0.55	0.20	3.10	1.65	2.80	2.10	0.50	0.70	12°

Absolute maximum ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Value	Unit
Drain-source voltage	V_{DS}	-60	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain current	I_D	-200	mA
Pulsed drain current	I_{DM}	800	mA
Power dissipation	P_D	285	mW
Thermal resistance from junction to ambient	$R_{\theta JA}$	347	$^\circ\text{C/W}$
Junction temperature and storage temperature	T_J, T_{STG}	-50 ~ 150	$^\circ\text{C}$

Electrical characteristics ($T_A = 25^\circ\text{C}$)

Characteristic	Test condition	Symbol	Value			Unit
			Min.	Typ.	Max.	
Drain-source breakdown voltage	$I_D = -250\mu\text{A}$, $V_{GS} = 0\text{V}$	V_{DSS}	-60	-	-	V
Drain-source leakage current	$V_{DS} = -60\text{V}$, $V_{GS} = 0\text{V}$	I_{DSS}	-	-	-1.0	μA
Gate-source leakage current	$V_{DS} = 0\text{V}$, $V_{GS} = \pm 20\text{V}$	I_{GSS}	-	-	± 10	μA
Gate threshold voltage	$V_{DS} = V_{GS}$, $I_D = -250\mu\text{A}$	$V_{GS(th)}$	-1.1	-1.6	-2.2	V
Static drain-source on-state resistance	$V_{GS} = -10\text{V}$, $I_D = -150\text{mA}$	$R_{DS(ON)}$	-	3.7	4.7	Ω
	$V_{GS} = -4.5\text{V}$, $I_D = -100\text{mA}$		-	4.7	5.7	

Dynamic electrical characteristics

Characteristic	Test condition	Symbol	Value			Unit
			Min.	Typ.	Max.	
Input capacitance	$V_{DS} = -30\text{V}$ $V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$	C_{iss}	-	35	-	pF
Output capacitance		C_{oss}	-	35	-	
Reverse transfer capacitance		C_{rss}	-	5	-	
Total gate charge	$V_{DS} = -30\text{V}$ $V_{GS} = -10\text{V}$ $I_D = -150\text{mA}$	Q_g	-	1.8	-	nC
Gate source charge		Q_{gs}	-	0.5	-	
Gate drain charge		Q_{gd}	-	0.18	-	

Switching characteristics

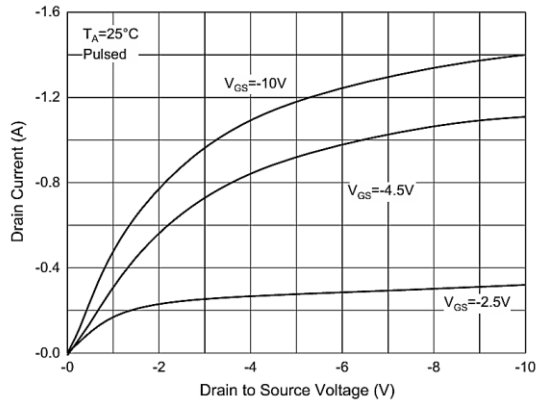
Characteristic	Test condition	Symbol	Value			Unit
			Min.	Typ.	Max.	
Turn on delay time	$V_{DS} = -30\text{V}$ $V_{GS} = -4.5\text{V}$ $R_G = 2.5\Omega$ $I_D = -150\text{mA}$	$t_{d(ON)}$	-	8.6	-	ns
Turn on rise time		t_r	-	20	-	
Turn off delay time		$t_{d(OFF)}$	-	14	-	
Turn off fall time		t_f	-	77	-	

Source drain diode characteristics

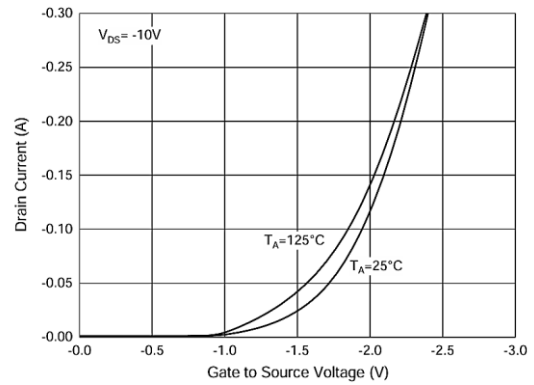
Characteristic	Test condition	Symbol	Value			Unit
			Min.	Typ.	Max.	
Source drain current (body diode)	$T_A = 25^\circ\text{C}$	I_{SD}	-	-	-200	mA
Drain-source diode forward voltage	$I_S = -200\text{mA}$, $V_{GS} = 0\text{V}$	V_{SD}	-	-	-1.2	V

Typical performance characteristics

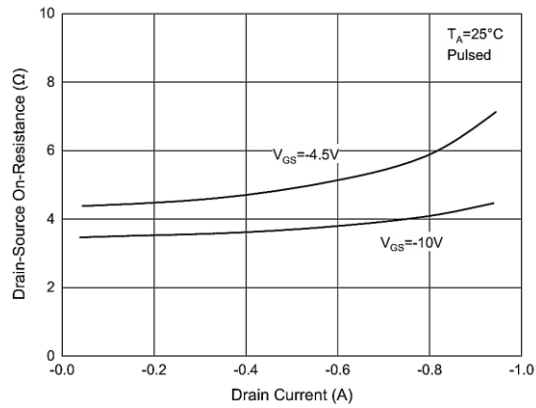
Output characteristics



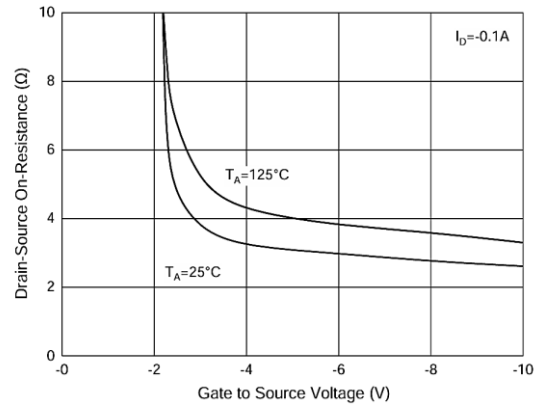
Transfer characteristics



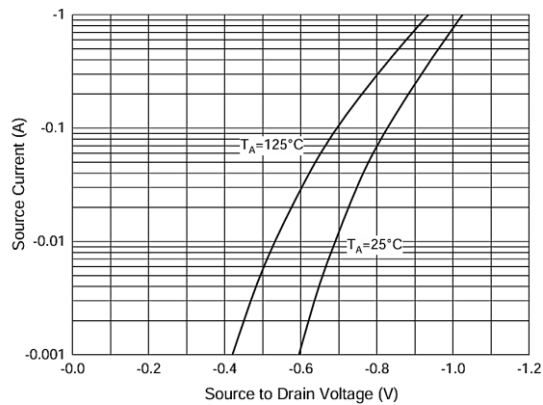
Drain-source on resistance



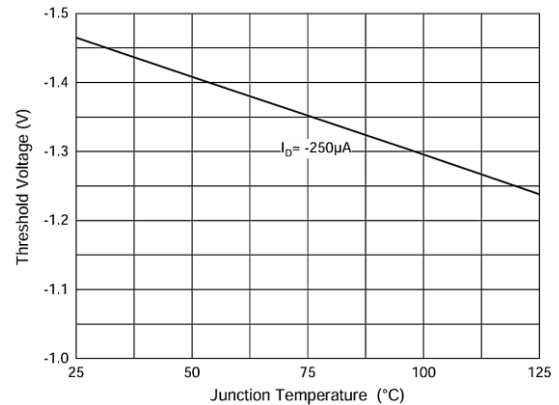
Drain-source on resistance



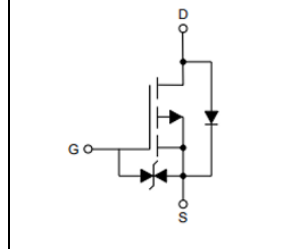
Diode forward voltage vs. current



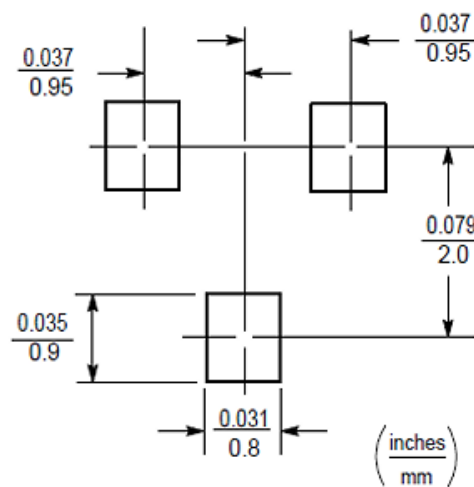
Gate threshold vs. junction temperature



Equivalent circuit



Suggested soldering pad layout



SOT-23

Ordering information

Part number	Package	Shipping quantity	Dimensions
BSS84K	SOT-23	3 000 pcs / 7" reel	---

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