

Product Summary

- V_{DS} -50V
- I_D -0.13A
- $R_{DS(ON)}$ (at $V_{GS}=-10V$) <5 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) <6 mohm

Application

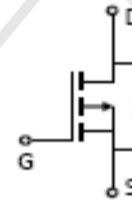
- Battery protection
- Load switch
- Power management

Package and Pin Configuration

SOT-23



Circuit diagram



Marking: B84

Absolute Maximum Ratings ($T_A=25^{\circ}C$ unless otherwise noted)

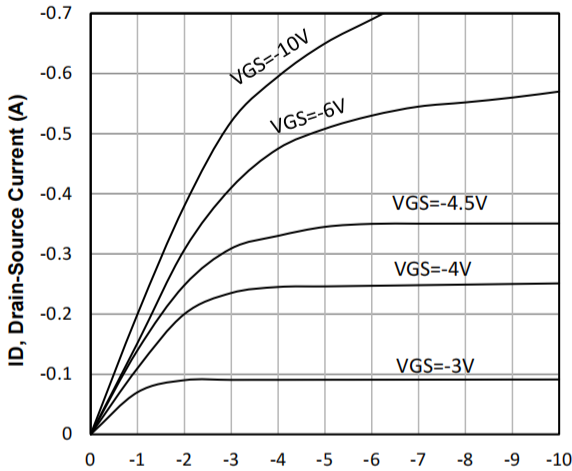
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-50	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	-0.13	A
Pulsed Drain Current (note 1) @tp <10 μ s	I_{DM}	-0.52	A
Power Dissipation	P_D	225	mW
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	556	$^{\circ}C/W$
Junction Temperature	T_J	150	$^{\circ}C$
Storage Temperature	T_{STG}	-55~+150	$^{\circ}C$
Maximum Lead Temperature for Soldering Purposes , Duration for 5 Seconds	T_L	260	$^{\circ}C$

Electrical Characteristics ($T_J=25\text{ }^\circ\text{C}$, unless otherwise noted)

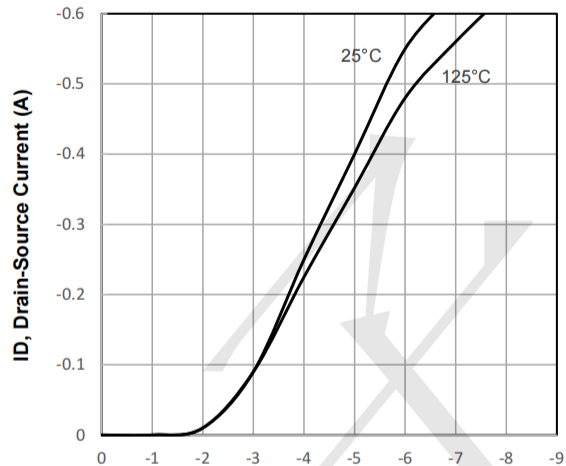
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERISTICS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-50			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -50V, V_{GS} = 0V$			-15	μA
		$V_{DS} = -25V, V_{GS} = 0V$			-0.1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 5	μA
Gate threshold voltage (note 3)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.9	-1.6	-2	V
Drain-source on-resistance (note 3)	$R_{DS(on)}$	$V_{GS} = -5V, I_D = -0.1A$		4	5	Ω
		$V_{GS} = -10V, I_D = -0.1A$		4.5	6	Ω
Forward transconductance (note 1)	g_{FS}	$V_{DS} = -25V; I_D = -100mA$	50			mS
DYNAMIC CHARACTERISTICS (note 4)						
Input capacitance	C_{iss}	$V_{DS} = 5V, V_{GS} = 0V, f = 1MHz$		30		pF
Output capacitance	C_{oss}			10		pF
Reverse transfer capacitance	C_{rss}			5		pF
SWITCHING CHARACTERISTICS (note 4)						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -15V, R_L = 50\Omega, I_D = -2.5A$		2.5		ns
Turn-on rise time	t_r			1		ns
Turn-off delay time	$t_{d(off)}$			16		ns
Turn-off fall time	t_f			8		ns
SOURCE-DRAIN DIODE CHARACTERISTICS						
Continuous Current	I_S				-0.13	A
Pulsed Current	I_{SM}				-0.52	A
Diode forward voltage (note 3)	V_{SD}	$I_S = -0.13A, V_{GS} = 0V$			-2.2	V



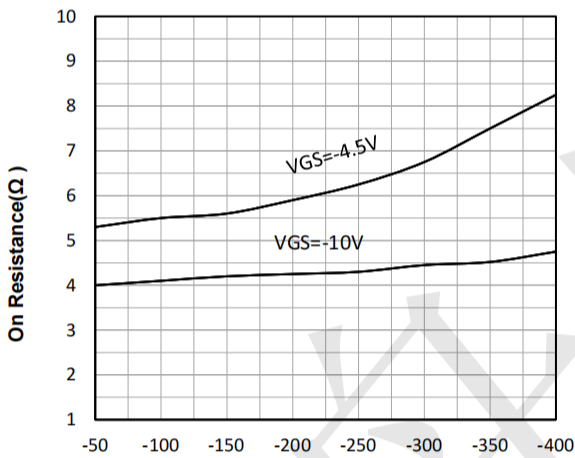
Typical Electrical and Thermal Characteristics



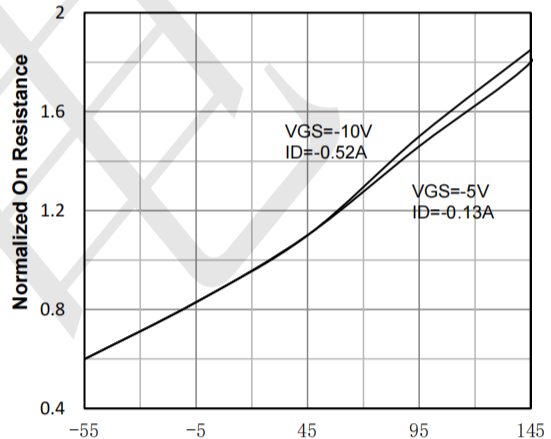
VDS, Drain-Source Voltage (V)
Fig1. Typical Output Characteristics



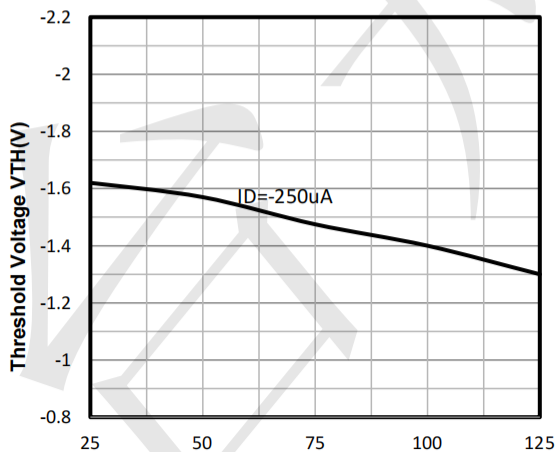
VGS(TH), Gate-Source Voltage (V)
Fig2. Typical Transfer Characteristics



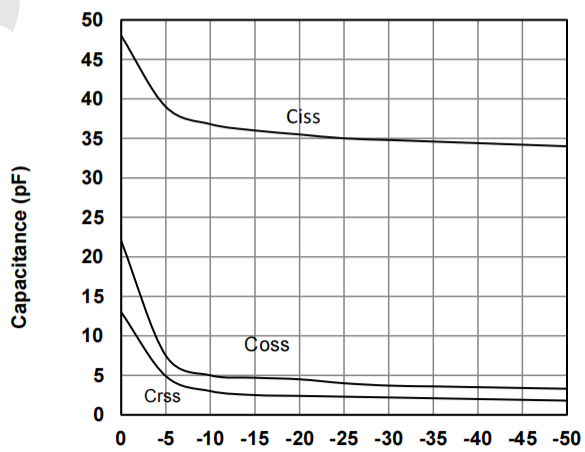
ID, Drain-Source Current (mA)
Fig3. Drain-Source on Resistance



TJ - Junction Temperature (°C)
Fig4. Normalized On-Resistance vs. Temperature



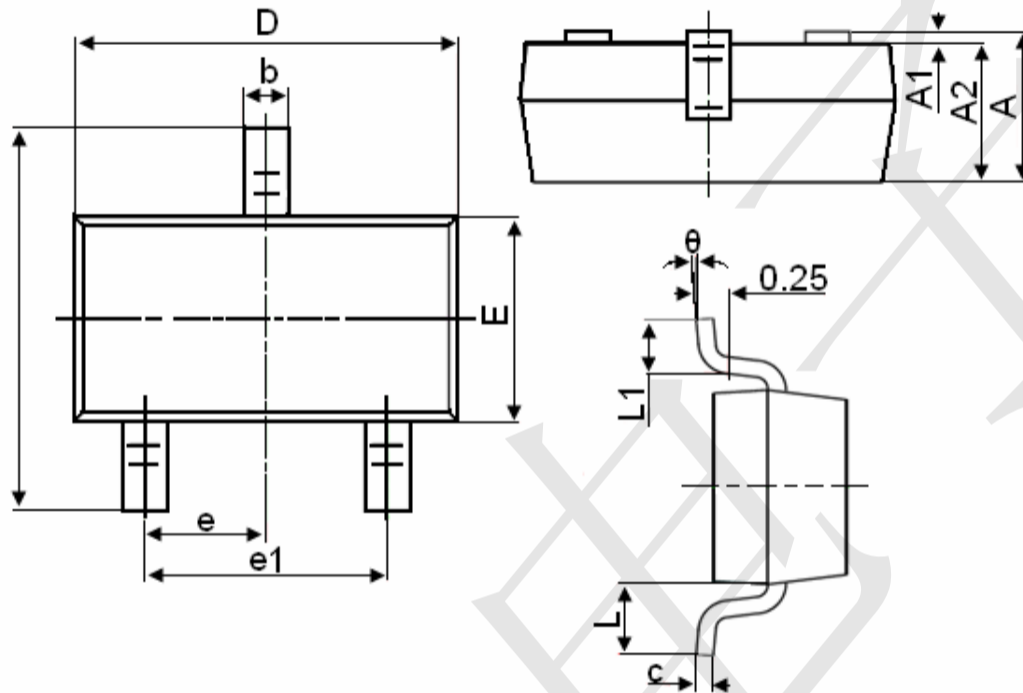
TJ - Junction Temperature (°C)
Fig5. Gate Threshold vs. Junction Temperature



VDS, Drain-Source Voltage (V)
Fig6. Typical Capacitance vs. Drain-Source Voltage



SOT-23 Package Information



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

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