

## Small Signal MOSFET

### P-Channel

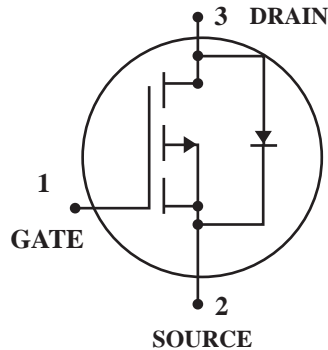
**(Pb)** Lead(Pb)-Free

#### Features:

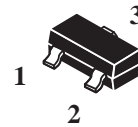
- \*Low On-Resistance : 10Ω
- \*Low Input Capacitance: 30PF
- \*Low Out put Capacitance : 10PF
- \*Low Threshold : 2.0V
- \*Fast Switching Speed : 2.5ns

#### Application:

- \* DC to DC Converter
- \* Cellular & PCMCIA Card
- \* Cordless Telephone
- \* Power Management in Portable and Battery etc.



#### SOT-23



### Maximum Ratings (TA=25°C Unless Otherwise Specified)

Rating	Symbol	Value	Unite
Drain-Source Voltage	V <sub>DSS</sub>	50	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current (TA=25°C)	I <sub>D</sub>	130	mA
Pulsed Drain Current(tp≤10us)	I <sub>DM</sub>	520	mA
Power Dissipation (TA=25°C)	P <sub>D</sub>	225	mW
Maximax Junction-to-Ambient	R <sub>θJA</sub>	556	°C/W
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to 150	°C

### Device Marking

BSS84=PD

## Electrical Characteristics (T<sub>A</sub>=25° C Unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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### Static<sup>(1)</sup>

Drain-Source Breakdown Voltage V <sub>GS</sub> =0V, I <sub>D</sub> =250 uA	V <sub>(BR)DSS</sub>	50	-	-	V
Gate-Source Threshold Voltage V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =1.0 mA	V <sub>GS(th)</sub>	0.8	-	2.0	V
Gate-Source Leakage Current V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V	I <sub>GSS</sub>	-	-	±60	uA
Zero Gate Voltage Drain Current V <sub>DS</sub> =25V, V <sub>GS</sub> =0V V <sub>DS</sub> =50V, V <sub>GS</sub> =0V	I <sub>DSS</sub>	-	-	0.1 15	uA
Drain-Source On-Resistance V <sub>GS</sub> =5.0V, I <sub>D</sub> =100mA	r <sub>DS(on)</sub>	-	5.0	10	Ω
Forward Transconductance V <sub>DS</sub> =25V, I <sub>D</sub> =100mA, f=1.0KHZ	g <sub>fs</sub>	50	-	-	mS

### Dynamic

Input Capacitance V <sub>DS</sub> =5V, V <sub>GS</sub> =0V, f=1MHZ	C <sub>iss</sub>	-	30	-	PF
Output Capacitance V <sub>DS</sub> =5V, V <sub>GS</sub> =0V, f=1MHZ	C <sub>oss</sub>	-	10	-	
Reverse Transfer Capacitance V <sub>DS</sub> =5V, V <sub>GS</sub> =0V, f=1MHZ	C <sub>rss</sub>	-	5.0	-	

### Switching<sup>(2)</sup>

Turn-On Time V <sub>DD</sub> =-15V, I <sub>D</sub> =-2.5A, R <sub>L</sub> =50 Ω	t <sub>d(on)</sub>	-	25	-	nS
Rise Time V <sub>DD</sub> =-15V, I <sub>D</sub> =-2.5A, R <sub>L</sub> =50 Ω	t <sub>r</sub>	-	1.0	-	
Turn-Off Time V <sub>DD</sub> =-15V, I <sub>D</sub> =-2.5A, R <sub>L</sub> =50 Ω	t <sub>d(off)</sub>	-	16	-	nS
Fall Time V <sub>DD</sub> =-15V, I <sub>D</sub> =-2.5A, R <sub>L</sub> =50 Ω	t <sub>f</sub>	-	8.0	-	
Gate Charge	Q <sub>T</sub>	-	6000	-	PC

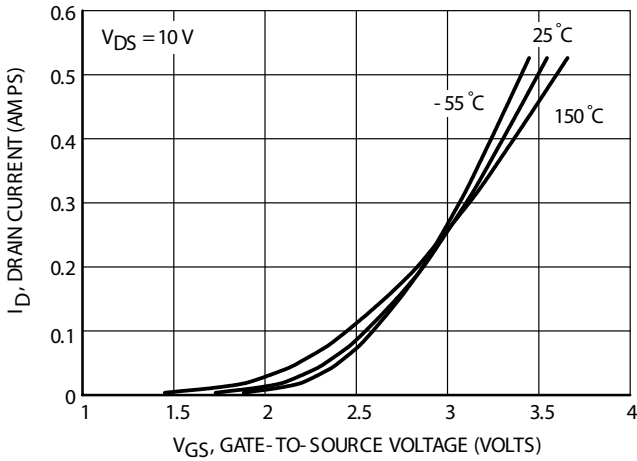
### Source-Drain Diode Characteristics

Continuous Current	I <sub>S</sub>	-	-	0.130	A
Pulsed Current	I <sub>SM</sub>	-	-	0.520	
Forward Voltage <sup>(2)</sup>	V <sub>SD</sub>	-	2.5	-	V

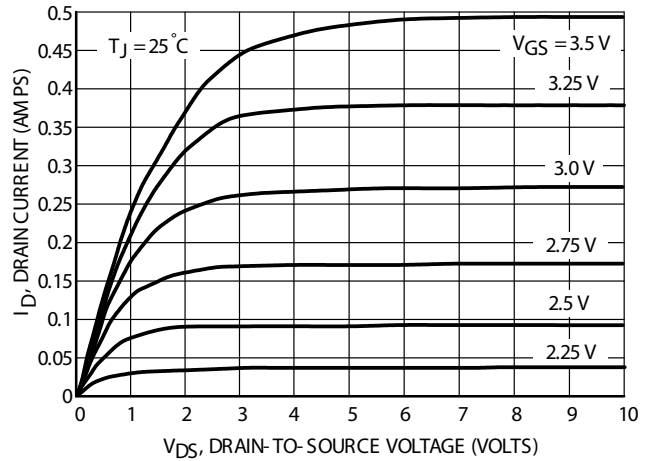
Note:

1. Pulse Test : PW ≤300us, Duty Cycle ≤2%.
2. Switching Time is Essentially Independent of Operating Temperature.

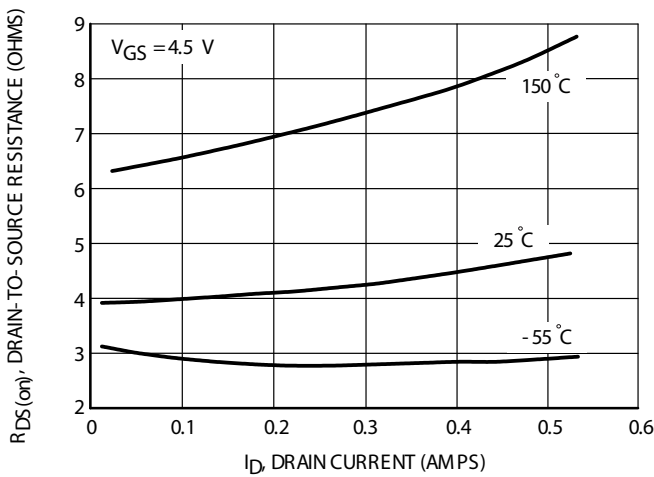
## TYPICAL ELECTRICAL CHARACTERISTICS



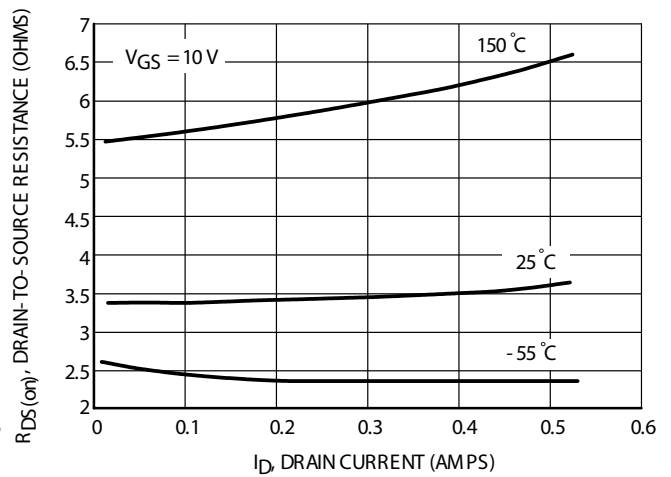
**FIG1. Transfer Characteristics**



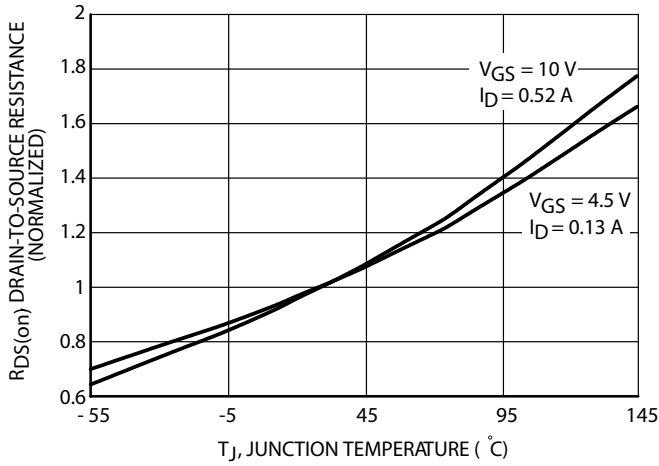
**FIG2. On-Region Characteristics**



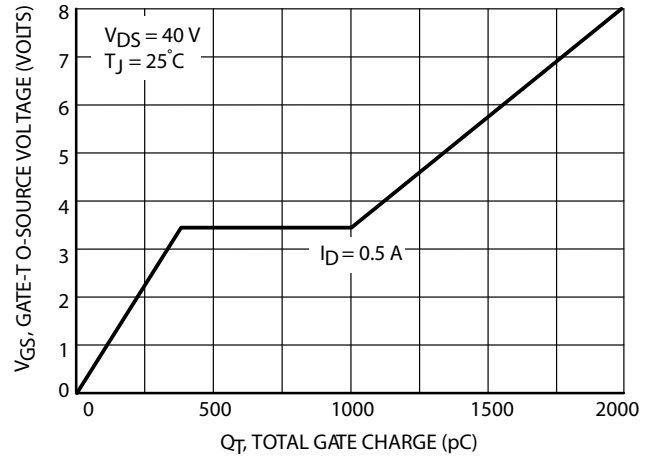
**FIG3. On-Resistance versus Drain Current**



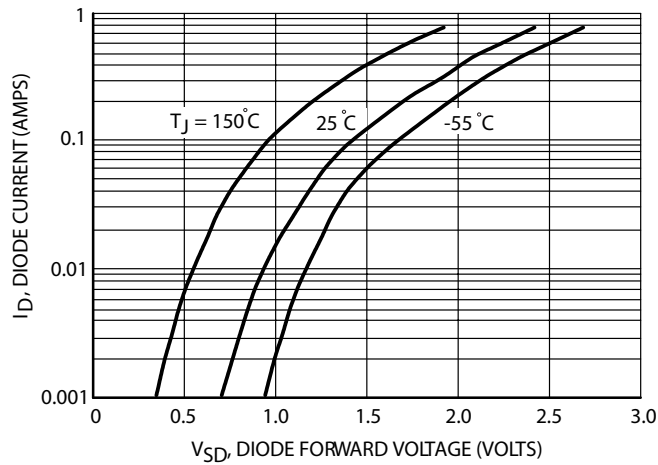
**FIG4. On-Resistance versus Drain Current**



**FIG5. On-Resistance Variation with Temperature**



**FIG6. Gate Charge**



**FIG7. Body Diode Forward Voltage**