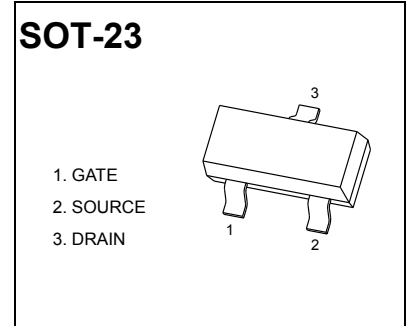


## SOT-23 Plastic-Encapsulate MOSFETS

### 100V N-Channel Enhancement Mode Power MOSFETS

VDS=100V  
 RDS(ON), Vgs@ 10V, Ids@1.0A < 250 m Ω  
 RDS(ON), Vgs@ 4.5V, Ids@1.0A < 300 m Ω



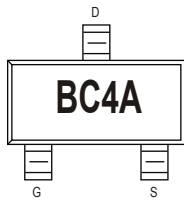
### FEATURE

High dense cell design for extremely low RDS(ON)  
 Fully characterized avalanche voltage and current  
 Excellent package for good heat dissipation

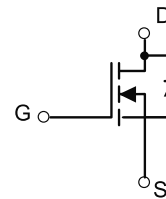
### APPLICATION

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

### MARKING



### Equivalent circuit



### PACKAGE SPECIFICATIONS

Package	Reel Size	Reel DIA. (mm)	Q'TY/Reel (pcs)	Box Size (mm)	QTY/Box (pcs)	Carton Size (mm)	Q'TY/Carton (pcs)
SOT-23	7'	330	3000	203×203×195	45000	438×438×220	180000

### MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	100	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	3.0	A
Drain Current-Pulsed (note 1)	I <sub>DM</sub>	12	A
Power Dissipation	P <sub>D</sub>	1.25	W
Thermal Resistance from Junction to Ambient (note 2)	R <sub>JA</sub>	41.7	/W
Junction Temperature	T <sub>J</sub>	-55 ~+150	
Storage Temperature	T <sub>STG</sub>	-55 ~+150	

#### Notes

- 1) Pulse width limited by maximum junction temperature.  
 2) Surface Mounted on FR4 Board, t ≤ 5 sec.

## MOSFET ELECTRICAL CHARACTERISTICS

 $T_a=25^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Off Characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	100	110		V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 100V, V_{GS} = 0V$			1	$\mu A$
Gate-source leakage current	$I_{GSS}$	$V_{GS} = \pm 10V, V_{DS} = 0V$			$\pm 10$	$\mu A$
<b>On characteristics</b>						
Drain-source on-resistance (note 3)	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 1A$		185	250	m
		$V_{GS} = 4.5V, I_D = 1A$		200	300	m
Forward transconductance	$g_{FS}$	$V_{DS} = 5V, I_D = 2.9A$	8			S
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0		3.0	V
<b>Dynamic Characteristics (note 4)</b>						
Input capacitance	$C_{iss}$	$V_{DS} = 50V, V_{GS} = 0V, f = 1MHz$		390		pF
Output capacitance	$C_{oss}$				200	pF
Reverse transfer capacitance	$C_{rss}$				160	pF
Gate resistance	$R_g$	$V_{DS} = 0V, V_{GS} = 0V, f = 1MHz$		1.1	2.0	
<b>Switching Characteristics (note 4)</b>						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = 15V, V_{DS} = 50V,$ $R_L = 3.0, R_{GEN} = 3.0$		6		ns
Turn-on rise time	$t_r$			12		ns
Turn-off delay time	$t_{d(off)}$			4.5		ns
Turn-off fall time	$t_f$			16		ns
<b>Drain-source diode characteristics and maximum ratings</b>						
Diode forward voltage (note 3)	$V_{SD}$	$I_S = 1A, V_{GS} = 0V$			1.2	V

**Note :**

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. temperature. Surface Mounted on FR4 Board,  $t \leq 10$  sec.
3. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production testing.

Typical Characteristics

Figure1. Source-Drain Diode Forward Voltage

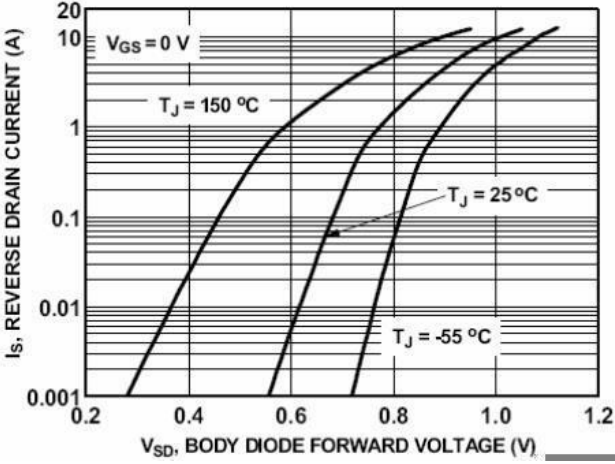


Figure2. Safe operating area

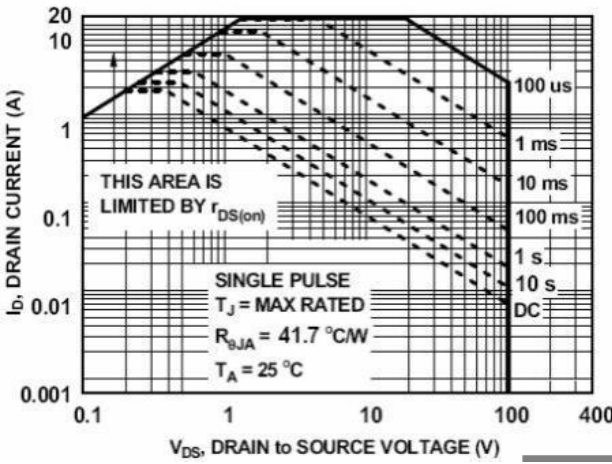


Figure3. Output characteristics

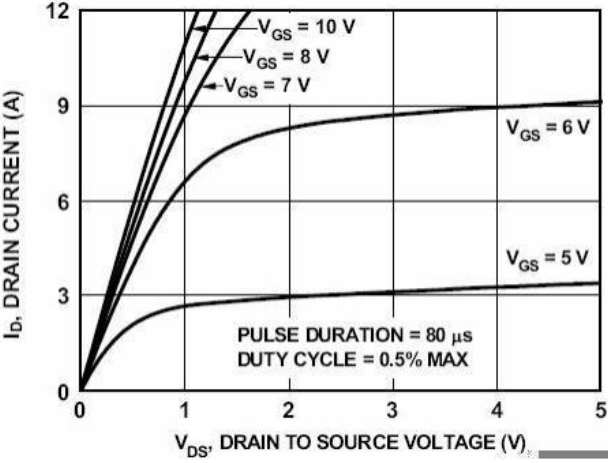


Figure4. Transfer characteristics

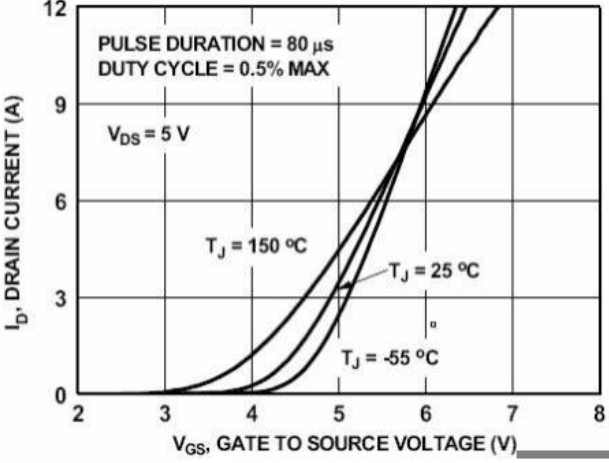


Figure5. Static drain-source on resistance

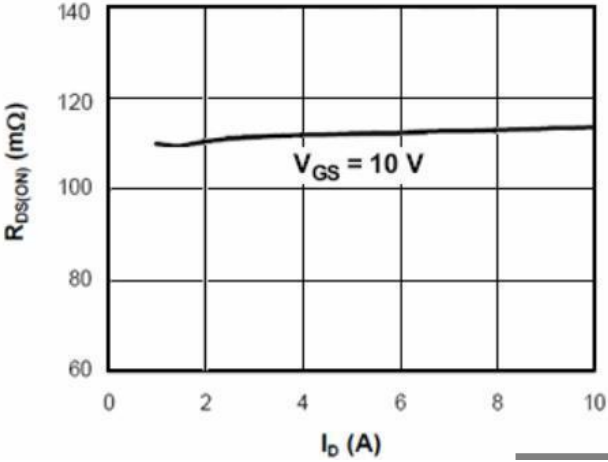
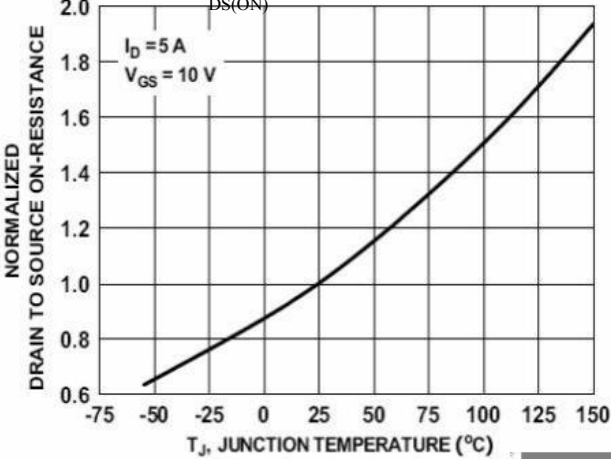


Figure6.  $R_{DS(on)}$  vs Junction Temperature



Typical Characteristics

Figure7.  $BV_{DSS}$  vs Junction Temperature

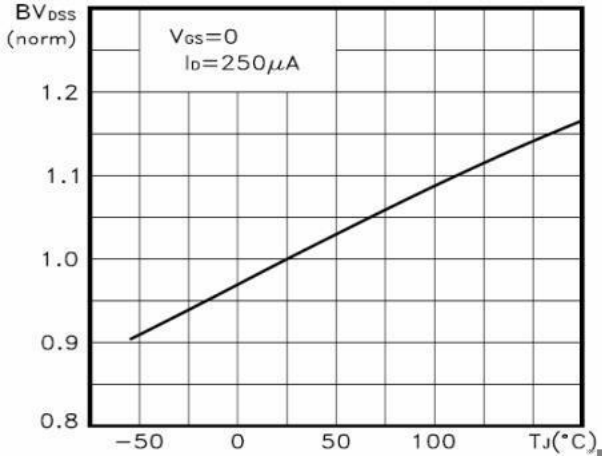


Figure8.  $V_{GS(th)}$  vs Junction Temperature

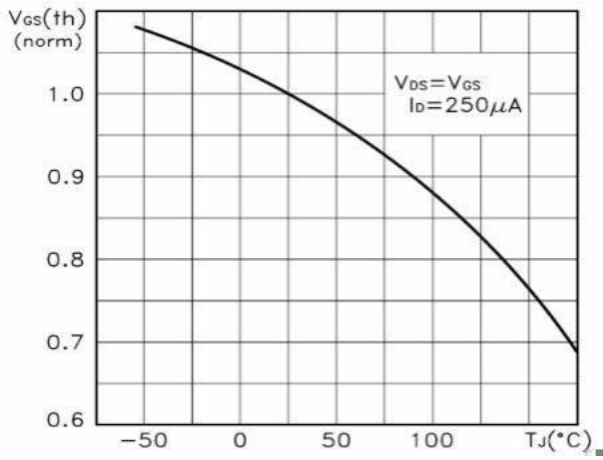


Figure9. Gate charge waveforms

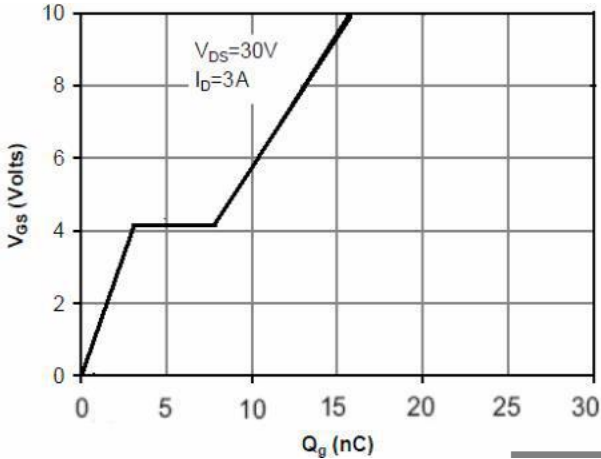


Figure10. Capacitance

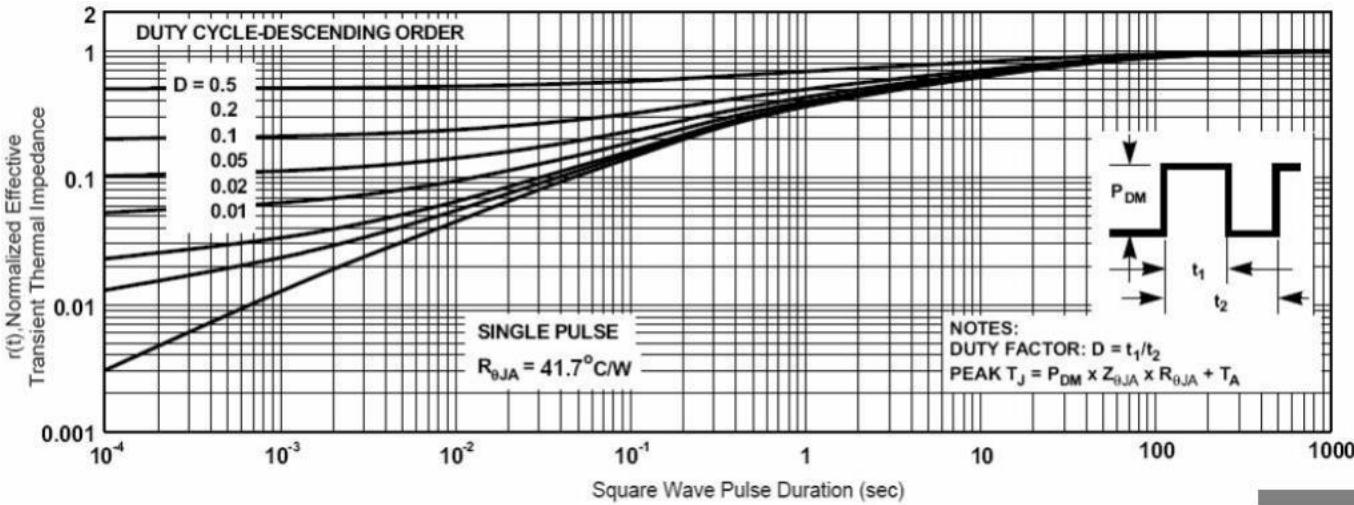
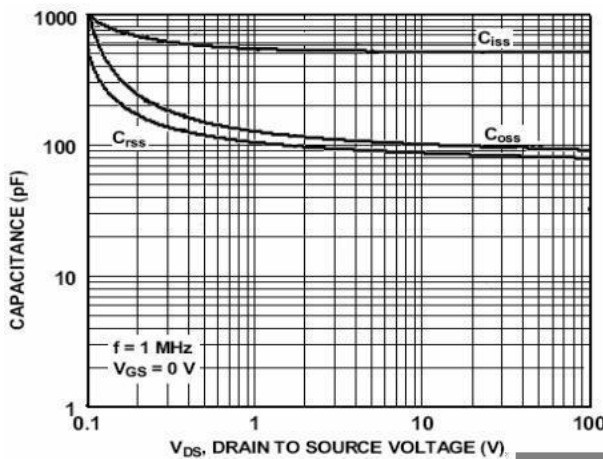
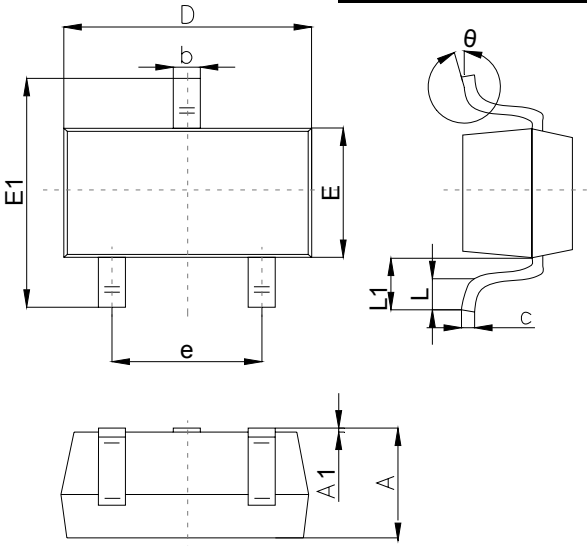


Figure11. Normalized Maximum Transient Thermal Impedance

The curve above is for reference only.

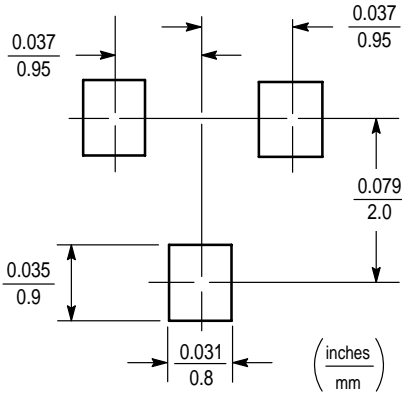
**Outline Drawing**

**SOT-23 Package Outline Dimensions**



Symbol	Dimensions In Millimeters		
	Min	Typ	Max
A	1.00		1.40
A1			0.10
b	0.35		0.50
c	0.10		0.20
D	2.70	2.90	3.10
E	1.40		1.60
E1	2.4		2.80
e		1.90	
L	0.10		0.30
L1	0.4		
theta	0°		10°

**Suggested Pad Layout**



Note:  
 1. Controlling dimension: in/millimeters.  
 2. General tolerance: ±0.05mm.  
 3. The pad layout is for reference purposes only.