



## SSC8042GS6

### N-Channel Enhancement Mode MOSFET

#### ➤ Features

VDS	VGS	RDSON Typ.	ID
40V	±20V	36mR@10V	4A
		45mR@4V5	

#### ➤ Description

This device uses advanced trench technology to provide excellent RDSON and low gate charge . This device is suitable for use as a load switch,DC-DC conversion and power switch applications.

#### ➤ Applications

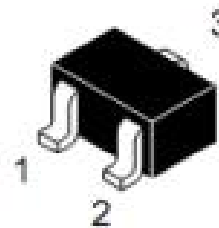
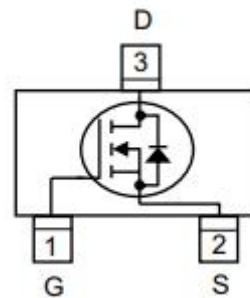
- Load Switch
- Power Switch
- Portable and consumer applications

#### ➤ Ordering Information

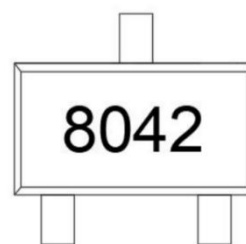
Device	Package	Shipping
SSC8042GS6	SOT23	3000/Reel

#### ➤ Pin configuration

Top view



SOT23



Marking



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

<b>Symbol</b>	<b>Parameter</b>	<b>Ratings</b>	<b>Unit</b>
$V_{DSS}$	Drain-to-Source Voltage	40	V
$V_{GSS}$	Gate-to-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current <sup>a</sup>	4	A
$P_D$	Power Dissipation <sup>a</sup>	0.71	W
$T_J$	Operation junction temperature	-55 to 150	$^{\circ}\text{C}$
$T_{STG}$	Storage temperature range	-55 to 150	$^{\circ}\text{C}$

➤ **Thermal Resistance Ratings**( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

<b>Symbol</b>	<b>Parameter</b>	<b>Typical</b>	<b>Maximum</b>	<b>Unit</b>
$R_{\theta JA}$	Junction-to-Ambient Thermal Resistance <sup>a</sup>		175	$^{\circ}\text{C}/\text{W}$

Note:

- a. The value of  $R_{\theta JA}$  is measured with the device mounted on 1 in<sup>2</sup> FR-4 board with 2oz.copper, in a still air environment with  $T_A=25^{\circ}\text{C}$ . The value in any given application depends on the user is specific board design. The current rating is based on the  $t \leq 10\text{s}$  thermal resistance rating.

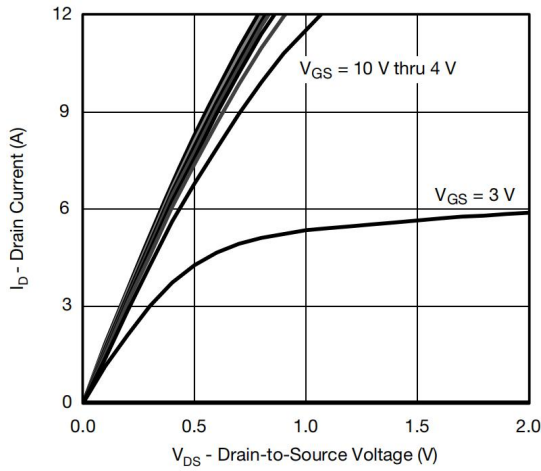


➤ **Electronics Characteristics**( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

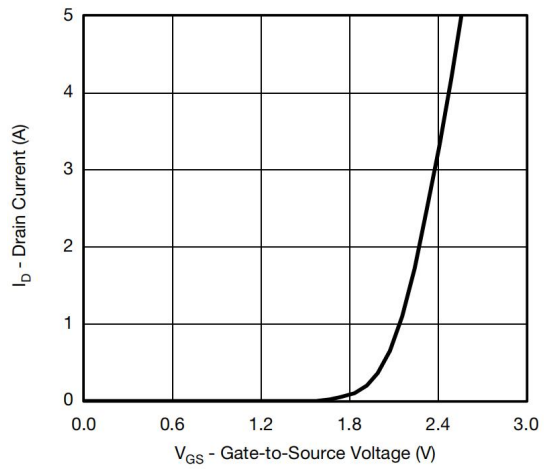
Symbol	Parameter	Test Conditions	Min	Typ.	Max	Unit
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	40			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1	1.5	2	V
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=10V, I_D=4A$		36	50	mR
		$V_{GS}=4.5V, I_D=3A$		45	65	mR
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=40V, V_{GS}=0V$			1	$\mu A$
$I_{GSS}$	Gate-Source leak current	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 100$	nA
$G_{FS}$	Transconductance	$V_{DS}=5V, I_D=4A$		10		S
$V_{SD}$	Forward Voltage	$V_{GS}=0V, I_S=2A$		0.8	1.3	V
$C_{iss}$	Input Capacitance	$V_{DS}=20V, V_{GS}=0V,$ $f=1MHz$		420		pF
$C_{oss}$	Output Capacitance			42		
$C_{rss}$	Reverse Transfer Capacitance			37		
$T_{D(ON)}$	Turn-on delay time	$V_{GS}=10V,$ $V_{DS}=20V, R_G=3R, R_L=5R$		4		ns
$T_r$	Rise Time			2.8		
$T_{D(OFF)}$	Turn-off delay time			19.7		
$T_f$	Fall Time			5.9		
$Q_g$	Total Gate charge	$V_{GS}=10V, V_{DS}=20V,$ $I_D=4A$		10.1		nC
$Q_{gs}$	Gate Source charge			1.1		
$Q_{gd}$	Gate Drain charge			2.3		
$T_{rr}$	Diode Recovery Time	$I_F=4A, di/dt=100A/\mu s$		11.2		ns
$Q_{rr}$	Diode Recovery Charge	$I_F=4A, di/dt=100A/\mu s$		4.4		nC



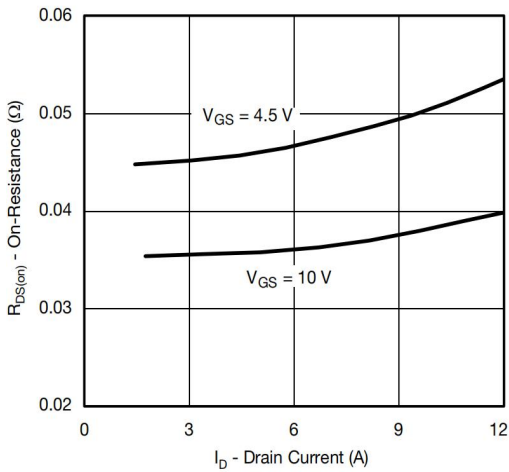
➤ **Typical Characteristics** ( $T_A=25^\circ\text{C}$  unless otherwise noted)



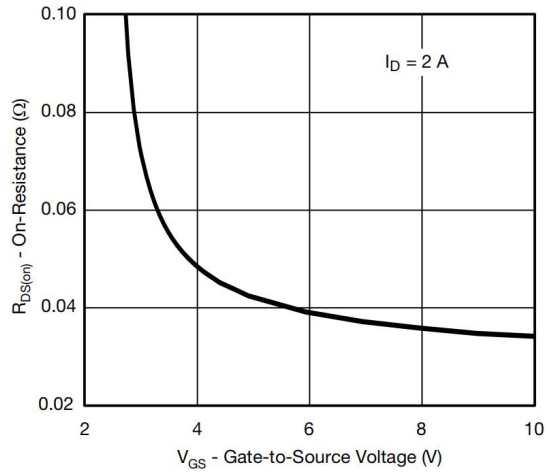
**Output Characteristics**



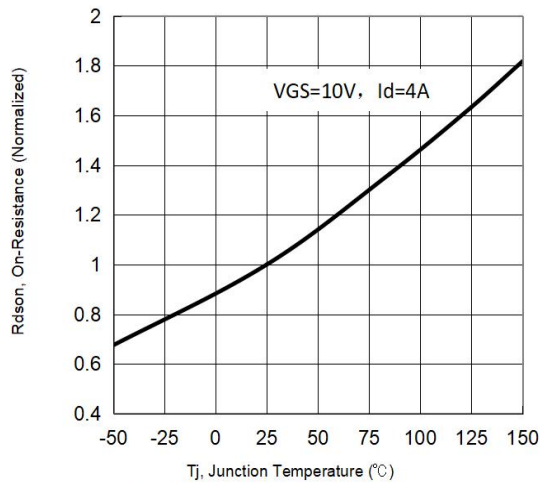
**Transfer Characteristics**



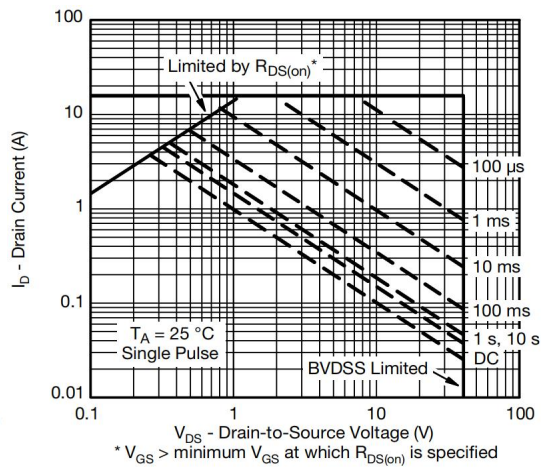
**On-Resistance vs. Drain Current and Gate Voltage**



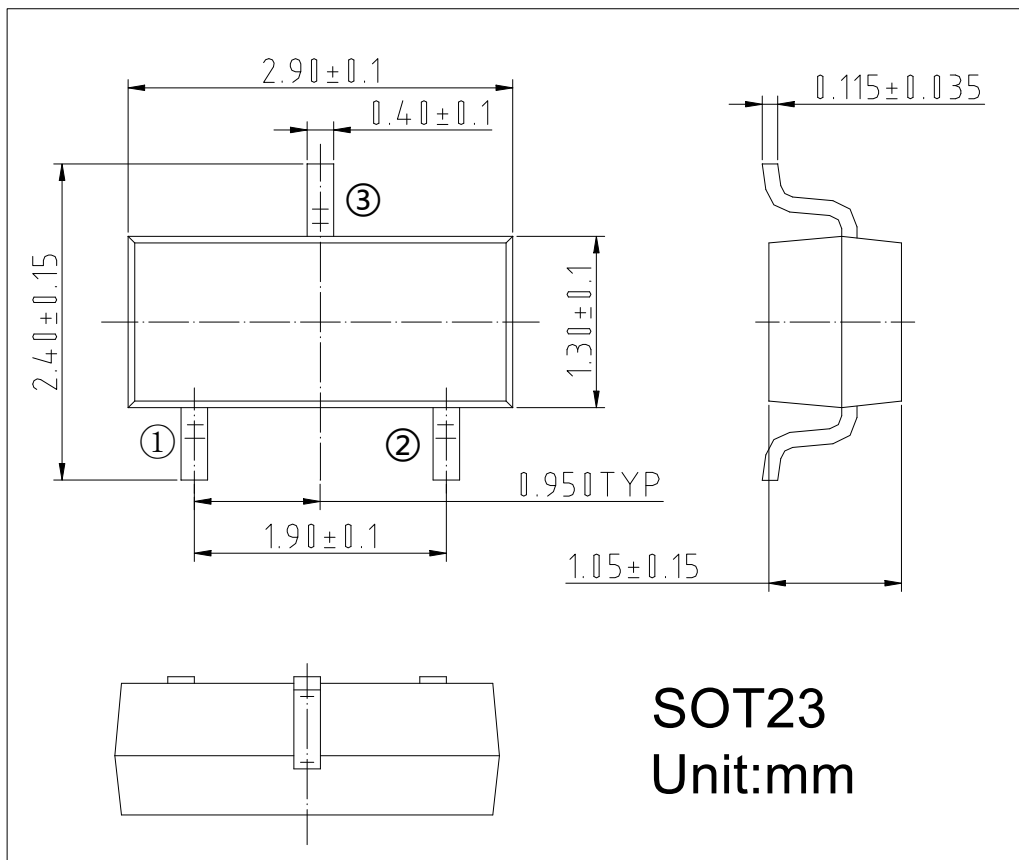
**On-Resistance vs. Gate-to-Source Voltage**



**On-Resistance vs. Junction Temperature**



**Safe Operating Area, Junction-to-Ambient**

**➤ Package Information**

**DISCLAIMER**

AFSEMI RESERVES THE RIGHT TO MAKE CHANGES WITHOUT FURTHER NOTICE TO ANY PRODUCTS HEREIN TO IMPROVE RELIABILITY, FUNCTION OR DESIGN. AFSEMI DOES NOT ASSUME ANY LIABILITY ARISING OUT OF THE APPLICATION OR USE OF ANY PRODUCT OR CIRCUIT DESCRIBED HEREIN; NEITHER DOES IT CONVEY ANY LICENCE UNDER ITS PATENT RIGHTS, NOR THE RIGHTS OF OTHERS.

THE GRAPHS PROVIDED IN THIS DOCUMENT ARE STATISTICAL SUMMARIES BASED ON A LIMITED NUMBER OF SAMPLES AND ARE PROVIDED FOR INFORMATIONAL PURPOSE ONLY. THE PERFORMANCE CHARACTERISTICS LISTED IN THEM ARE NOT TESTED OR GUARANTEED. IN SOME GRAPHS, THE DATA PRESENTED MAY BE OUTSIDE THE SPECIFIED OPERATING RANGE (E.G. OUTSIDE SPECIFIED POWER SUPPLY RANGE) AND THEREFORE OUTSIDE THE WARRANTED RANGE.