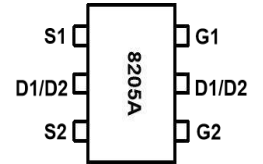


## Features

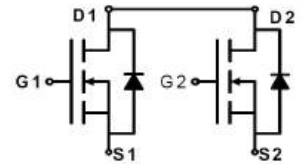
- Dual N-Channel
- Low FOM  $R_{DS(on)} \times Q_{gd}$
- Easy to use/drive
- RoHS compliant

$V_{DS}$	20	V
$R_{DS(on),TYP@ V_{GS}=4.5V}$	18	m $\Omega$
$R_{DS(on),TYP@ V_{GS}=2.5V}$	23	m $\Omega$
$I_D$	6	A

SOT23-6L



Part ID	Package Type	Marking	Packing
ZT8205A	SOT23-6L	8205A	3000pcs/Reel



## Absolute Maximum Ratings $T_A = 25^\circ\text{C}$ , unless otherwise specified

Symbol	Parameter	Rating	Unit	
<b>Common Ratings (<math>T_c=25^\circ\text{C}</math> Unless Otherwise Noted)</b>				
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V	
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	20	V	
$T_J$	Maximum Junction Temperature	150	$^\circ\text{C}$	
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
$I_{DM}$	Drain Current-Continuous@ Current-Pulsed (Note 1)	$T_c = 25^\circ\text{C}$ 24	A	
<b>Mounted on Large Heat Sink</b>				
$I_D$	Drain Current-Continuous	$T_c = 25^\circ\text{C}$	6	A
		$T_c = 100^\circ\text{C}$	4	A
$P_D$	Maximum Power Dissipation	1.5	W	
$R_{\theta JA}$	Thermal Resistance-Junction to Case	83.3	$^\circ\text{C/W}$	

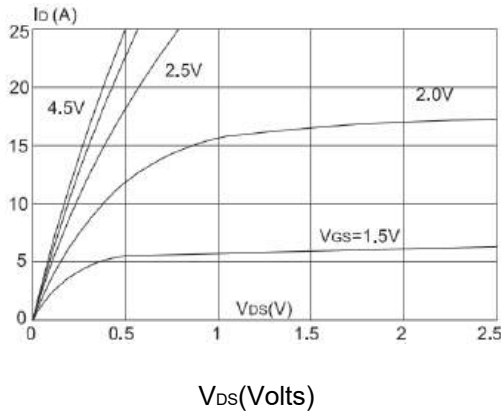
**Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

Symbol	Parameter	Condition	Min	Typ	Max	Unit
<b>Static Electrical Characteristics @ T<sub>J</sub>=25°C (unless otherwise stated)</b>						
V(BR)DSS	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	20	--	--	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =20V, V <sub>GS</sub> =0V	--	--	1	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0V	--	--	±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.5	0.7	0.9	V
R <sub>DS(on)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =4.5V, I <sub>D</sub> =2A	--	18	25	mΩ
R <sub>DS(on)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =2.5V, I <sub>D</sub> =2A	--	23	31	mΩ
<b>Dynamic Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b> (Note 2,3)						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f=1MHz	--	410	--	pF
C <sub>oss</sub>	Output Capacitance		--	70	--	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		--	58	--	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =10V, I <sub>D</sub> =3A, V <sub>GS</sub> =4.5V	--	11	--	nC
Q <sub>gs</sub>	Gate-Source Charge		--	2.2	--	nC
Q <sub>gd</sub>	Gate-Drain Charge		--	2.4	--	nC
<b>Switching Characteristics</b> (Note 2,3)						
T <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DS</sub> =10V, I <sub>D</sub> =3A R <sub>G</sub> =3.0Ω, V <sub>GS</sub> =4.5V	--	18	--	ns
T <sub>r</sub>	Turn-on Rise Time		--	5	--	ns
T <sub>d(off)</sub>	Turn-Off Delay Time		--	43	--	ns
T <sub>f</sub>	Turn-Off Fall Time		--	20	--	ns
<b>Source- Drain Diode Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
I <sub>S</sub>	Diode Forward Current		--	--	6	A
V <sub>SD</sub>	Forward on voltage	I <sub>S</sub> =2A, V <sub>GS</sub> =0V	--	--	1.2	V

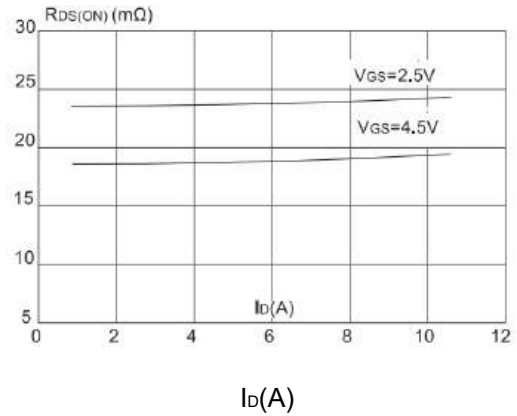
**Notes:**

1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. Pulse Test : Pulse width ≤ 300us, Duty cycle ≤ 0.5%
3. Essentially independent of operating temperature

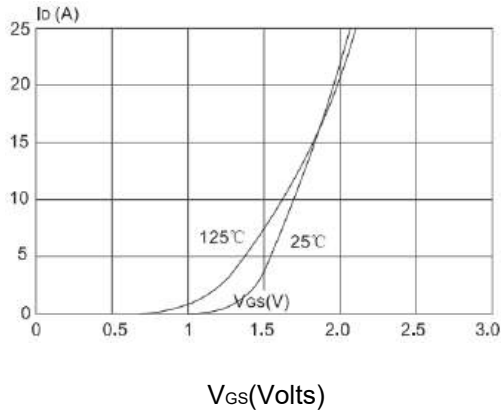
### Typical Performance Characteristics



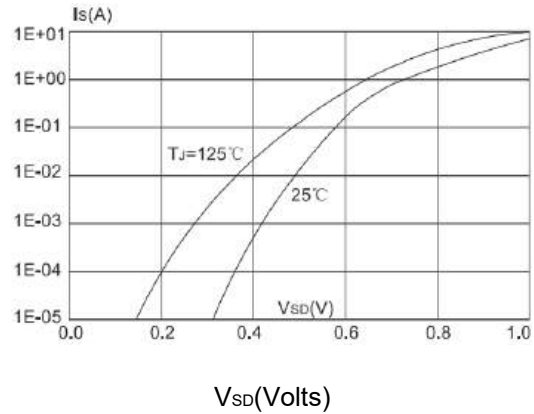
**Figure 1:** Output Characteristics



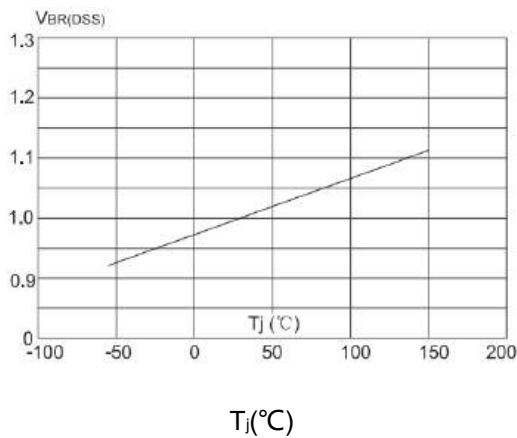
**Figure 4:** On-Resistance Variation vs. Drain Current



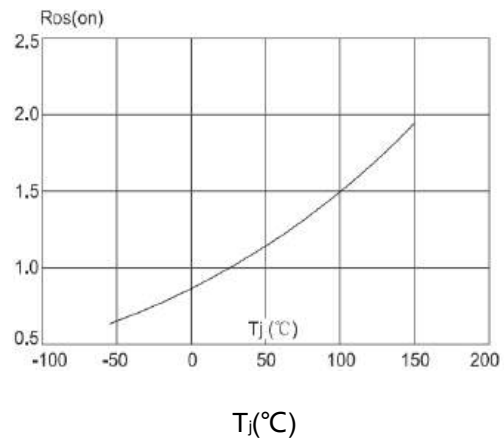
**Figure 2:** Transfer Characteristics



**Figure 5:** Body Diode Characteristics



**Figure.3:** Normalized Breakdown Voltage VS. Junction Temperature



**Figure.6:** Normalized on Resistance VS. Junction Temperature

Typical Performance Characteristics

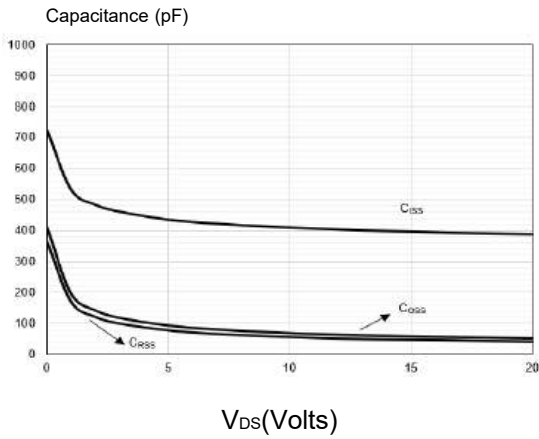


Figure 7: Capacitance Characteristics

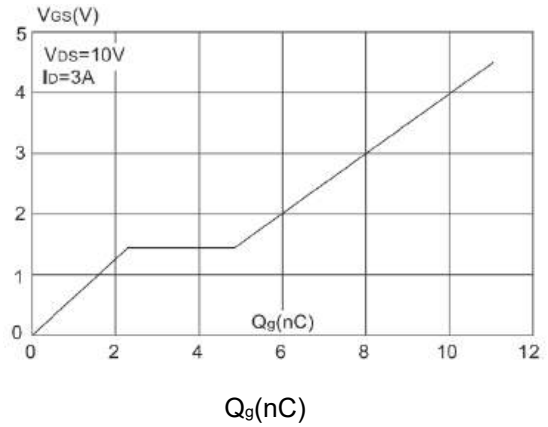


Figure 9: Gate Charge Characteristics

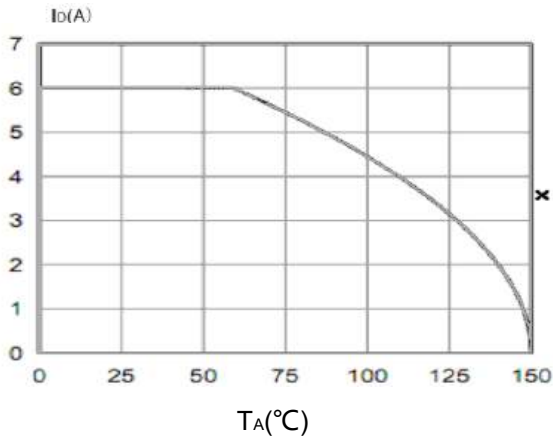


Figure 8: Maximum Continuous Drain Current VS. Ambient Temperature

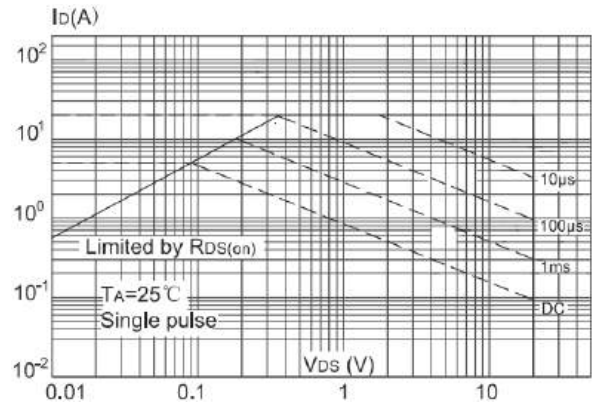


Fig.10 Safe Operating Area

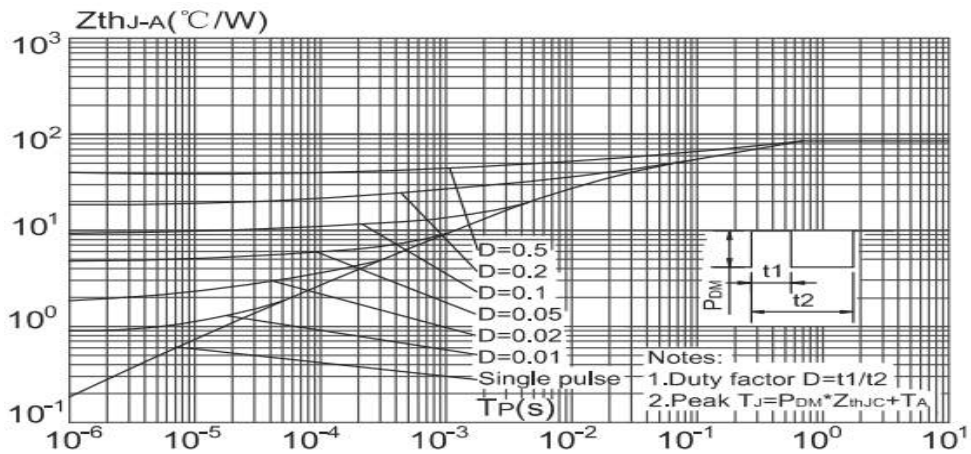
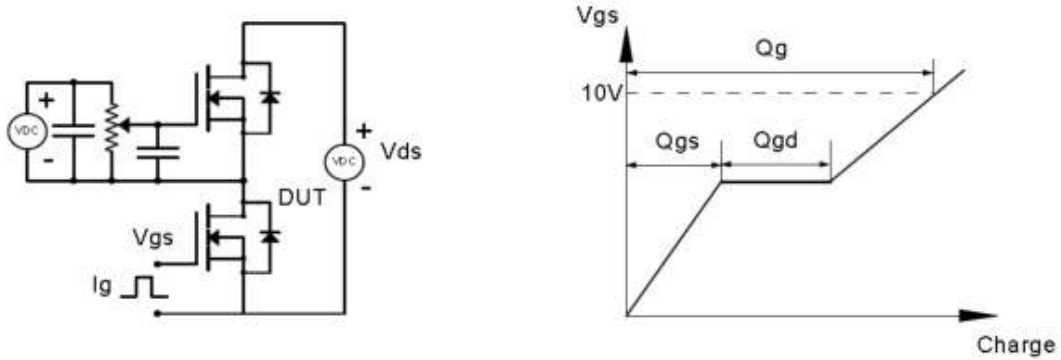


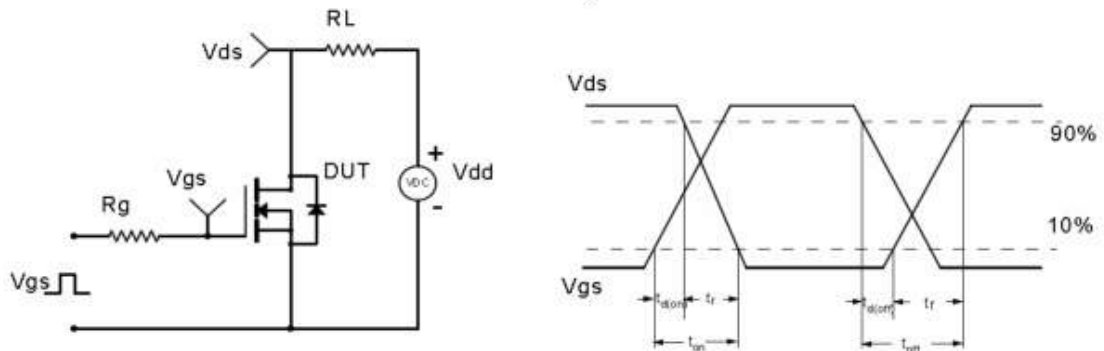
Fig. 11 Transient Thermal Response Curve

### Test Circuit & Waveform

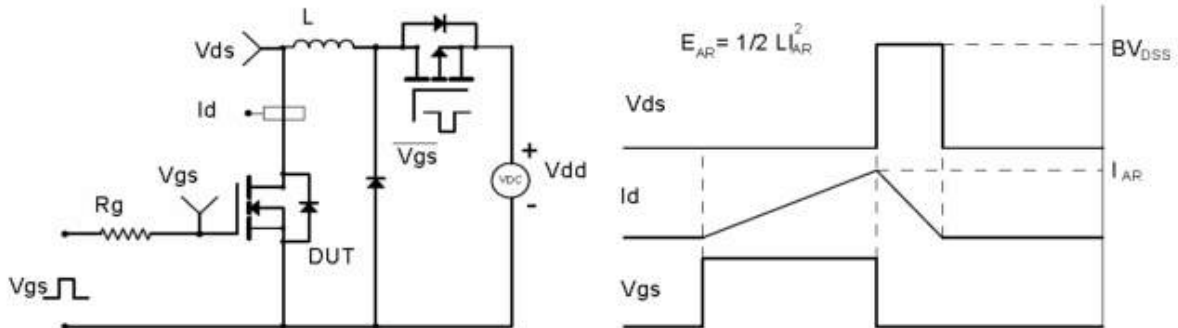
Gate Charge Test Circuit & Waveform



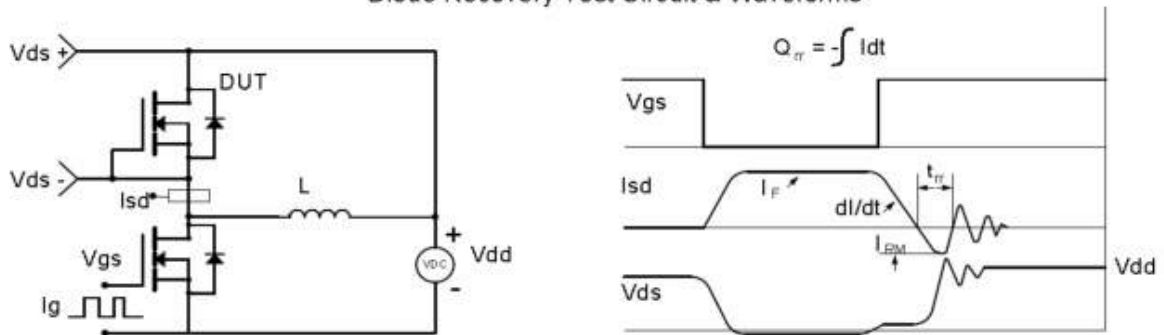
Resistive Switching Test Circuit & Waveforms



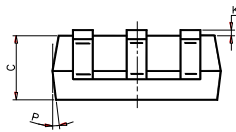
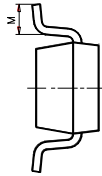
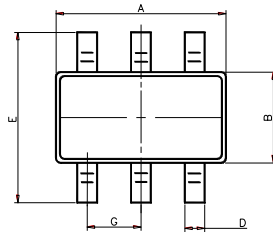
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



## SOT-23-6L Package Information



DIM	MILLIMETERS
A	2.82~3.02
B	1.60 ± 0.10
C	1.10 ± 0.05
D	0.40 ± 0.10
E	2.65~2.95
G	0.95typ
K	0.00~0.10
M	0.20MIN
P	9 ± 2°

## Customer Service

Sales and Service:

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