

RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

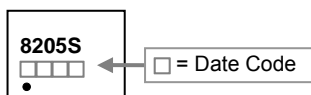
DESCRIPTION

The STT8205S provide the designer with best combination of fast switching, low on-resistance and cost-effectiveness. The TSOP-6 package is universally used for all commercial-industrial surface mount applications.

FEATURES

- Low on-resistance
- Capable of 2.5V gate drive
- Low drive current

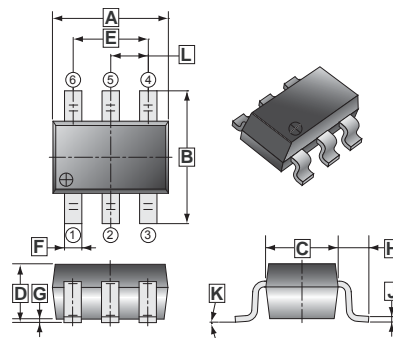
MARKING CODE



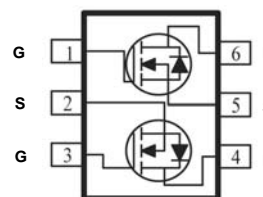
PACKAGE INFORMATION

Package	MPQ	LeaderSize
TSOP-6	3K	7' inch

TSOP-6



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0	0.10
B	2.60	3.00	H	0.60	REF.
C	1.40	1.80	J	0.12	REF.
D	1.10	MAX.	K	0°	10°
E	1.90	REF.	L	0.95	REF.
F	0.30	0.50			



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current ³	I_D	$V_{GS}=4.5\text{V}, T_A = 25^\circ\text{C}$	6
		$V_{GS}=4.5\text{V}, T_A = 70^\circ\text{C}$	4.8
Pulsed Drain Current ¹	I_{DM}	20	A
Power Dissipation	P_D	1.14	W
Maximum Junction to Ambient ³	$R_{\theta JA}$	110	$^\circ\text{C} / \text{W}$
Linear Derating Factor		0.01	$\text{W} / ^\circ\text{C}$
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS (T_j = 25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition	
Static							
Drain-Source Breakdown Voltage	BV _{DSS}	20	-	-	V	V _{GS} =0V, I _D =250μA	
Breakdown Voltage Temp. Coefficient	ΔBV _{DS} /ΔT _j	-	0.03	-	V / °C	Reference to 25°C, I _D =1mA	
Gate-Threshold Voltage	V _{GS(th)}	0.5	-	1.5	V	V _{DS} =V _{GS} , I _D =250μA	
Forward Transfer Conductance	G _{fs}	-	20	-	S	V _{DS} =10V, I _D =6A	
Gate-Body Leakage	I _{GSS}	-	-	±100	nA	V _{GS} =±10V	
Zero Gate Voltage Drain Current	I _{DSS}	T _j = 25°C	-	-	1	μA	V _{DS} =16V, V _{GS} =0
		T _j = 75°C	-	-	25	μA	V _{DS} =16V, V _{GS} =0
Drain-Source On-Resistance ²	R _{DS(ON)}	-	-	28	mΩ	V _{GS} =4.5V, I _D =6A	
		-	-	38		V _{GS} =2.5V, I _D =5.2A	
Total Gate Charge ²	Q _g	-	23	-	nC	I _D =6A V _{DS} =20V V _{GS} =5V	
Gate-Source Charge	Q _{gs}	-	4.5	-			
Gate-Drain ("Miller") Charge	Q _{gd}	-	7	-			
Turn-On Delay Time ²	T _{d(on)}	-	30	-	nS	V _{DS} =10V I _D =1A V _{GS} =5V R _G =6Ω R _D =10Ω	
Rise Time	T _r	-	70	-			
Turn-Off Delay Time	T _{d(off)}	-	40	-			
Fall Time	T _f	-	65	-			
Input Capacitance	C _{iss}	-	1035	-	pF	V _{GS} =0 V _{DS} =20V f=1.0MHz	
Output Capacitance	C _{oss}	-	320	-			
Reverse Transfer Capacitance	C _{rss}	-	150	-			
Source-Drain Diode							
Forward On Voltage ²	V _{DS}	-	-	1.2	V	I _S =1.7A, V _{GS} =0	

Notes:

- 1 Pulse width limited by Max. junction temperature.
- 2 Pulse width ≤ 300us, duty cycle ≤ 2%.
- 3 Surface mounted on 1 in² copper pad of FR4 board; t ≤ 5 sec. 180°C/W when mounted on min. copper pad.

CHARACTERISTICS CURVE

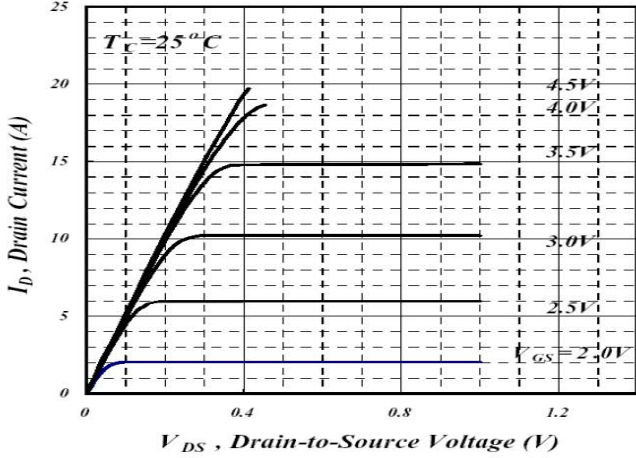


Fig 1. Typical Output Characteristics

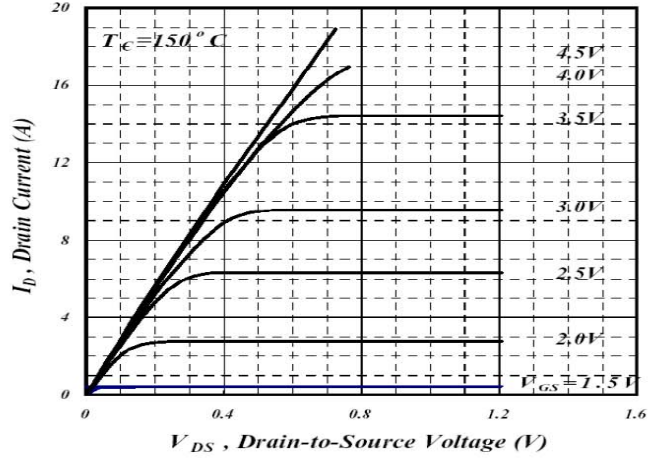


Fig 2. Typical Output Characteristics

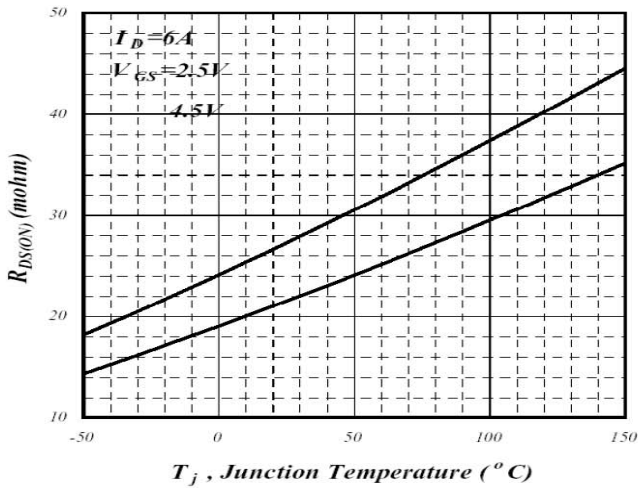


Fig 3. $R_{DS(ON)}$ vs. Junction Temperature

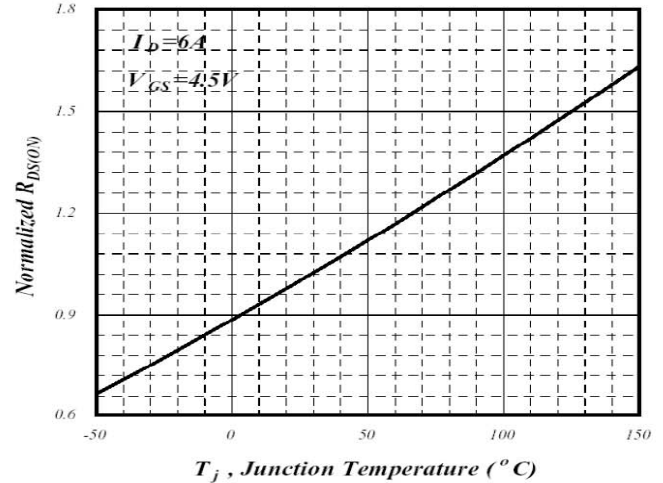


Fig 4. Normalized On-Resistance vs. Junction Temperature

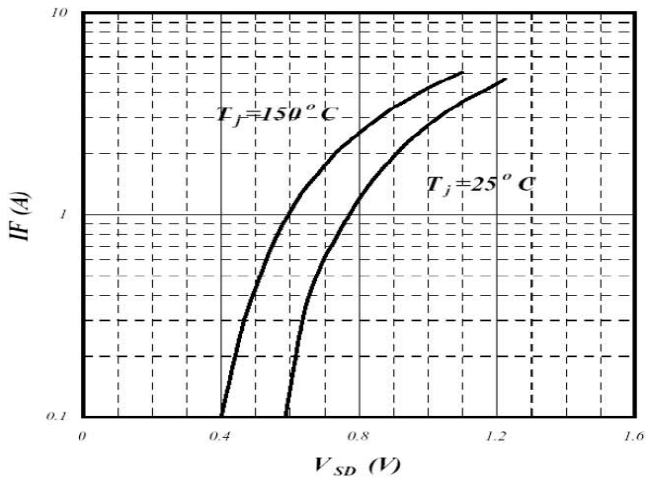


Fig 5. Forward Characteristics of Reverse Diode

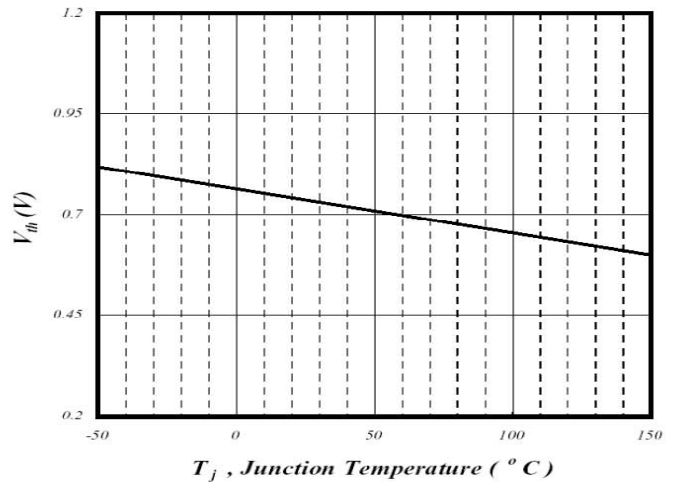


Fig 6. Gate Threshold Voltage vs. Junction Temperature

CHARACTERISTICS CURVE

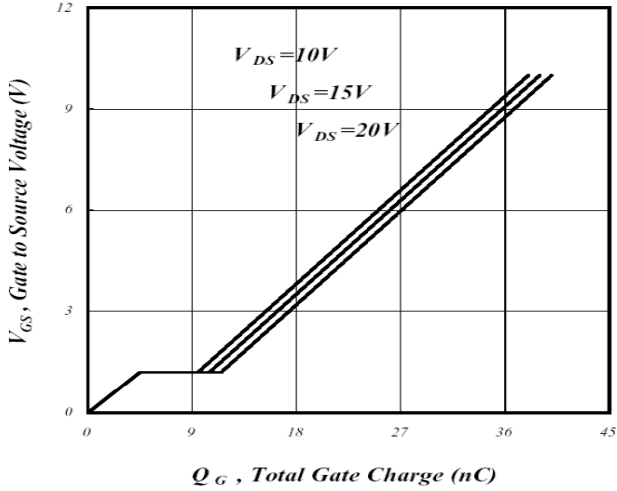


Fig 7. Gate Charge Characteristics

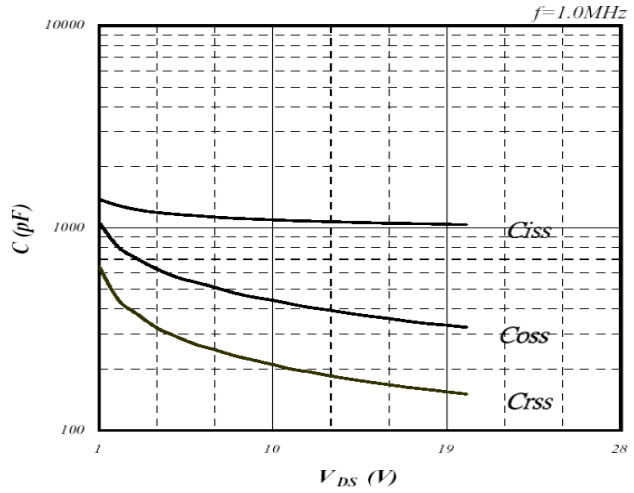


Fig 8. Typical Capacitance Characteristics

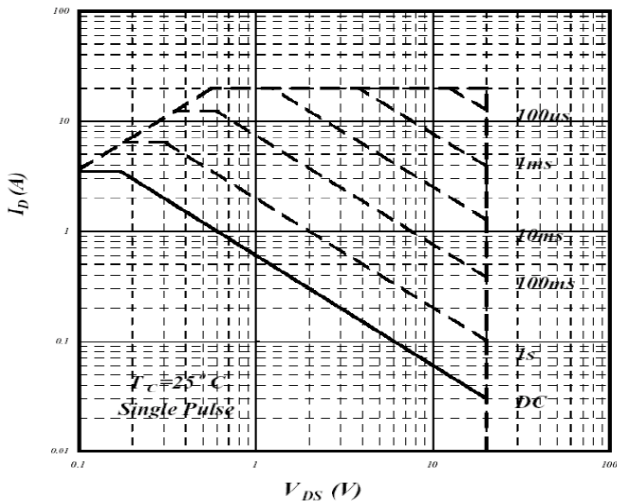


Fig 9. Maximum Safe Operating Area

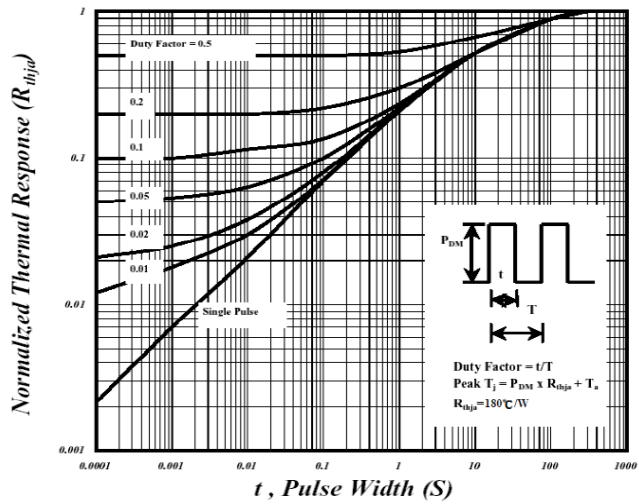


Fig 10. Effective Transient Thermal Impedance

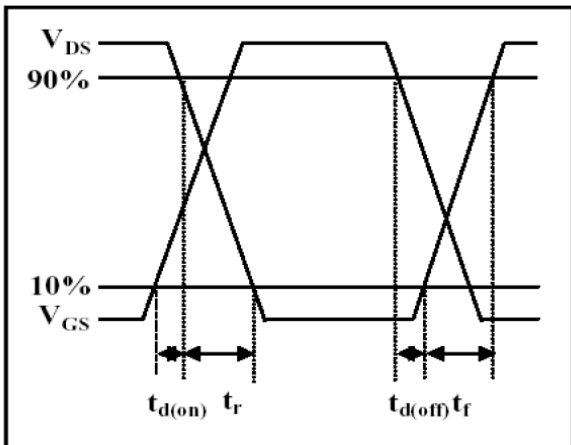


Fig 11. Switching Time Waveform

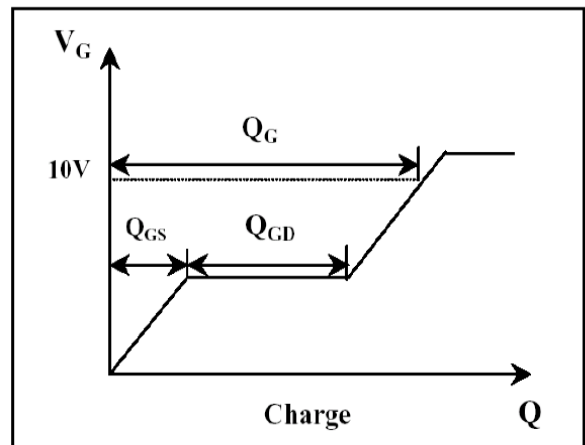


Fig 12. Gate Charge Waveform