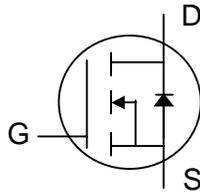


N-CHANNEL ENHANCEMENT-MODE POWER MOSFET

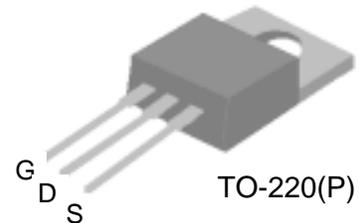
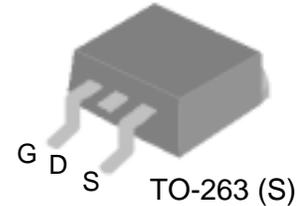
Low gate-charge
Simple drive requirement
Fast switching



BV_{DSS} 60V
 $R_{DS(ON)}$ 8.5m Ω
 I_D 75A

Description

The SSM95T06S is in a TO-263 package, which is widely used for commercial and industrial surface mount applications, and is well suited for low voltage applications such as DC/DC converters. The through-hole version, the SSM95T06P in TO-220, is available for low-footprint vertical mounting. These devices are manufactured with an advanced process, providing improved on-resistance and switching performance.



 **Pb-free lead finish (second-level interconnect)**

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_C=25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}^3$	75	A
$I_D @ T_C=100^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 10\text{V}$	66	A
I_{DM}	Pulsed Drain Current ¹	260	A
$P_D @ T_C=25^\circ\text{C}$	Total Power Dissipation	138	W
	Linear Derating Factor	1.11	W/ $^\circ\text{C}$
E_{AS}	Single Pulse Avalanche Energy ⁴	450	mJ
I_{AR}	Avalanche Current	30	A
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Value	Units
Rthj-c	Thermal Resistance Junction-case	Max. 0.9	$^\circ\text{C}/\text{W}$
Rthj-a	Thermal Resistance Junction-ambient	Max. 62	$^\circ\text{C}/\text{W}$

Electrical Characteristics @ $T_j=25^{\circ}\text{C}$ (unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=1mA$	60	-	-	V
$\Delta BV_{DSS}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to 25°C , $I_D=1mA$	-	0.05	-	$V/^{\circ}\text{C}$
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=10V, I_D=45A$	-	-	8.5	$m\Omega$
		$V_{GS}=4.5V, I_D=20A$	-	-	12	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1	-	3	V
g_{fs}	Forward Transconductance	$V_{DS}=10V, I_D=45A$	-	72	-	S
I_{DSS}	Drain-Source Leakage Current ($T_j=25^{\circ}\text{C}$)	$V_{DS}=60V, V_{GS}=0V$	-	-	10	μA
	Drain-Source Leakage Current ($T_j=150^{\circ}\text{C}$)	$V_{DS}=48V, V_{GS}=0V$	-	-	100	μA
I_{GSS}	Gate-Source Leakage	$V_{GS}=\pm 20V$	-	-	± 100	nA
Q_g	Total Gate Charge ²	$I_D=45A$	-	72	115	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=48V$	-	16	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	$V_{GS}=4.5V$	-	53	-	nC
$t_{d(on)}$	Turn-on Delay Time ²	$V_{DS}=30V$	-	20	-	ns
t_r	Rise Time	$I_D=45A$	-	76	-	ns
$t_{d(off)}$	Turn-off Delay Time	$R_G=3.3\Omega, V_{GS}=10V$	-	67	-	ns
t_f	Fall Time	$R_D=0.67\Omega$	-	109	-	ns
C_{iss}	Input Capacitance	$V_{GS}=0V$	-	5700	9200	pF
C_{oss}	Output Capacitance	$V_{DS}=25V$	-	900	-	pF
C_{rss}	Reverse Transfer Capacitance	$f=1.0MHz$	-	560	-	pF
R_g	Gate Resistance	$f=1.0MHz$	-	1.1	1.7	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage ²	$I_S=45A, V_{GS}=0V$	-	-	1.3	V
t_{rr}	Reverse Recovery Time ²	$I_S=20A, V_{GS}=0V$	-	40	-	ns
Q_{rr}	Reverse Recovery Charge	$di/dt=100A/\mu s$	-	60	-	nC

Notes:

1. Pulse width limited by safe operating area.
2. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. The maximum current is limited by the package to 75A.
4. Starting $T_j=25^{\circ}\text{C}$, $V_{DD}=30V$, $L=1mH$, $R_G=25\Omega$, $I_{AS}=30A$.

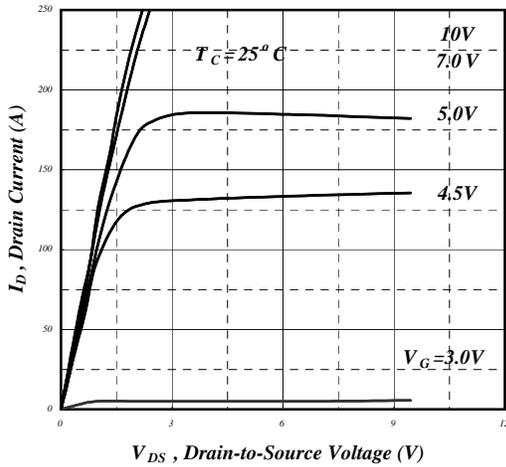


Fig 1. Typical Output Characteristics

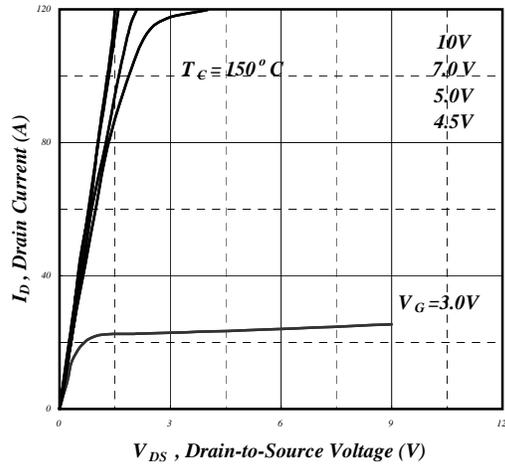


Fig 2. Typical Output Characteristics

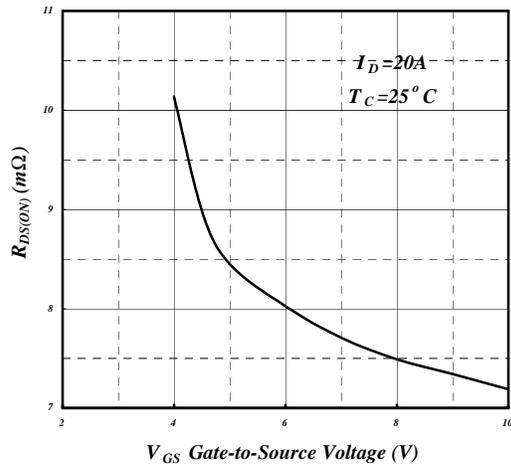


Fig 3. On-Resistance vs. Gate Voltage

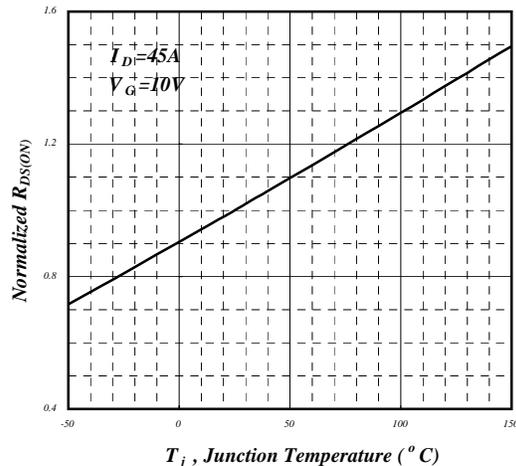


Fig 4. Normalized On-Resistance vs. Junction Temperature

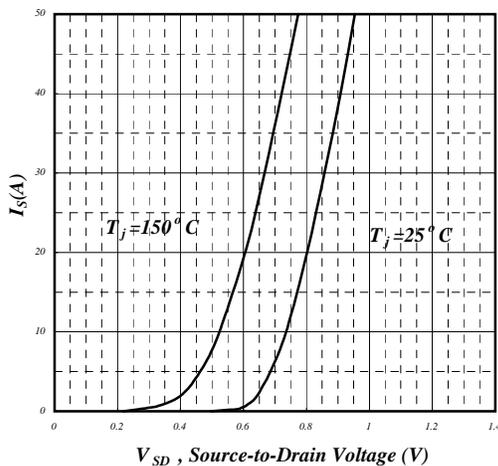


Fig 5. Forward Characteristic of Reverse Diode

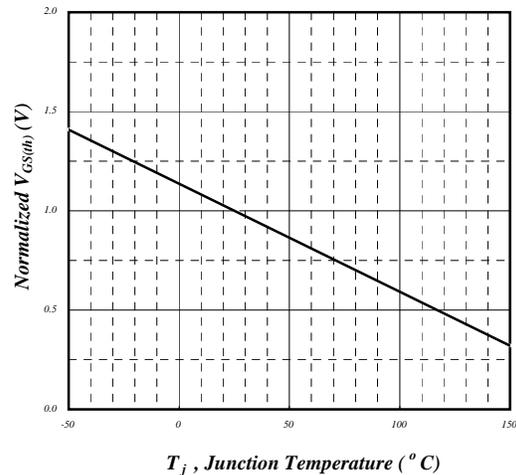


Fig 6. Gate Threshold Voltage vs. Junction Temperature

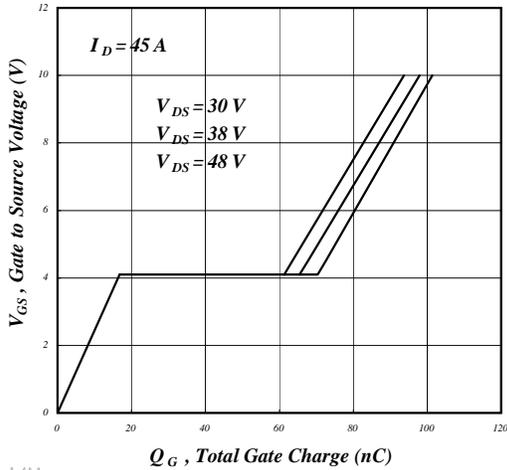


Fig 7. Gate Charge Characteristics

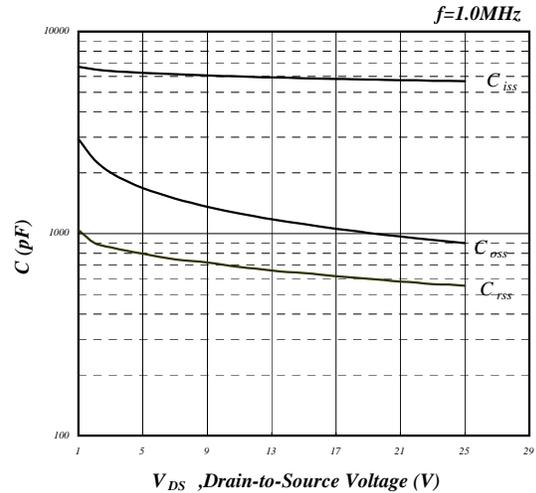


Fig 8. Typical Capacitance Characteristics

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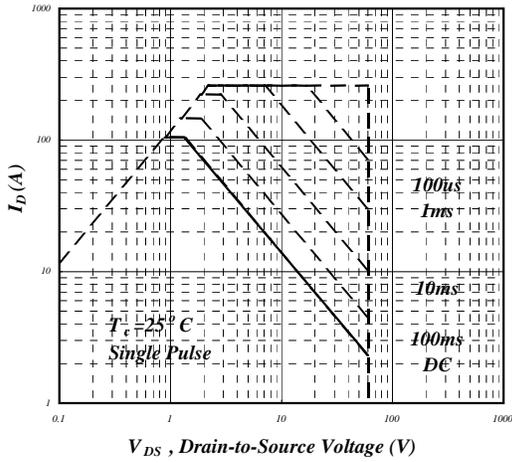


Fig 9. Maximum Safe Operating Area

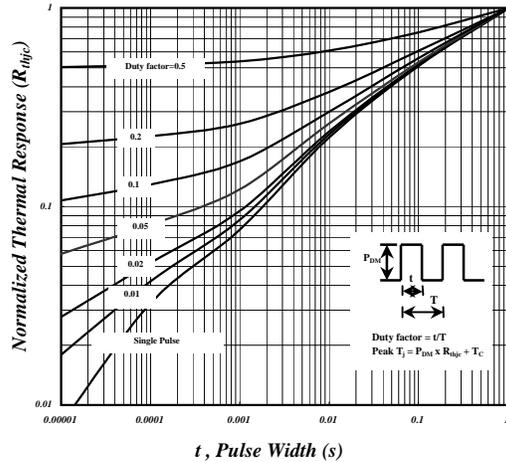


Fig 10. Effective Transient Thermal Impedance

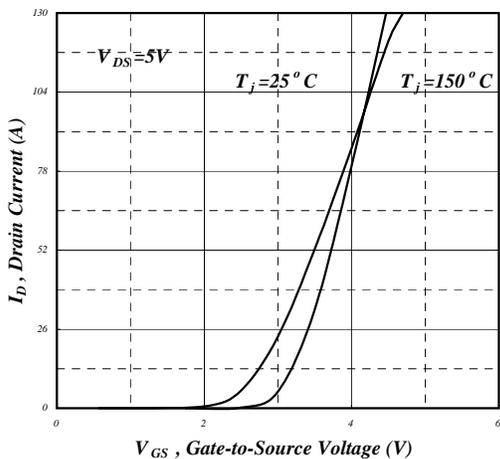


Fig 11. Transfer Characteristics

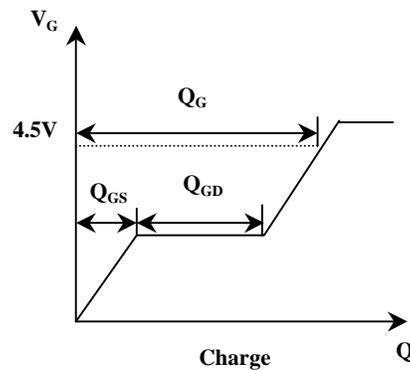


Fig 12. Gate Charge Waveform

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