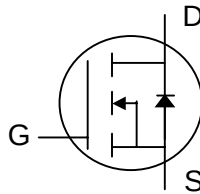


N-channel Enhancement-mode Power MOSFET

Low gate-charge
Simple drive requirement
Fast switching

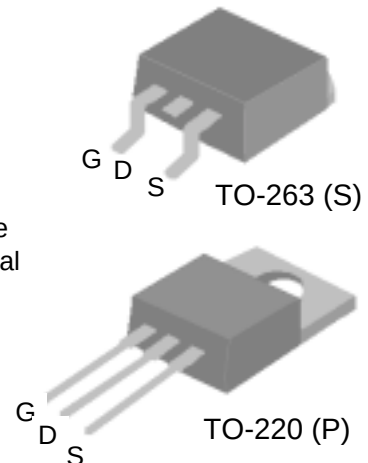
 **Pb-free, RoHS compliant.**



BV_{DS} 100V
 $R_{DS(ON)}$ 15mΩ
 I_D 72A

DESCRIPTION

The SSM75T10GS 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 SSM75T10GP 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.



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D @ T_C=25^{\circ}C$	Continuous Drain Current, $V_{GS} @ 10V^3$	72	A
$I_D @ T_C=100^{\circ}C$	Continuous Drain Current, $V_{GS} @ 10V$	45	A
I_{DM}	Pulsed Drain Current ¹	260	A
$P_D @ T_C=25^{\circ}C$	Total Power Dissipation	138	W
	Linear Derating Factor	1.11	W/°C
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

THERMAL DATA

Symbol	Parameter	Value	Units
Rthj-c	Thermal Resistance Junction-case Max.	0.9	°C/W
Rthj-a	Thermal Resistance Junction-ambient Max.	62	°C/W

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

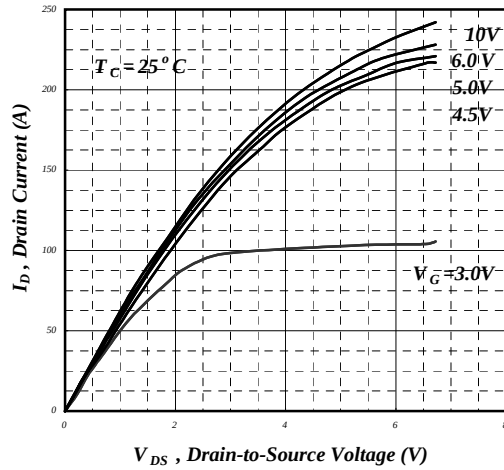
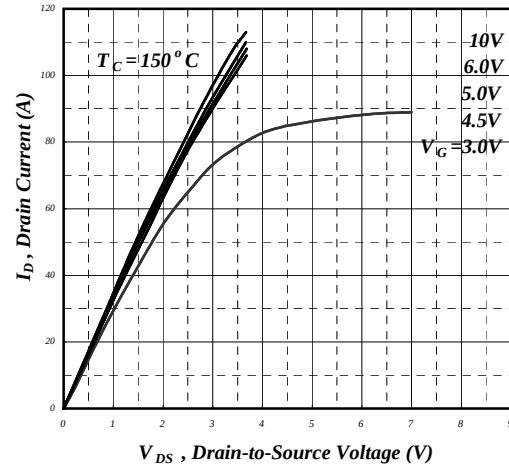
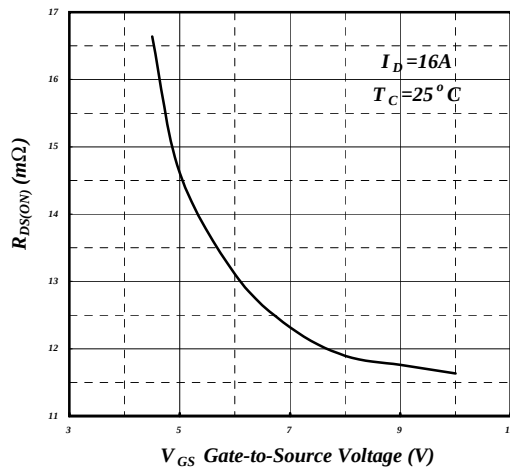
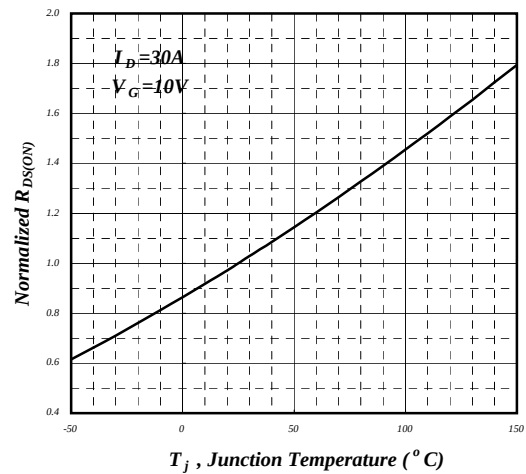
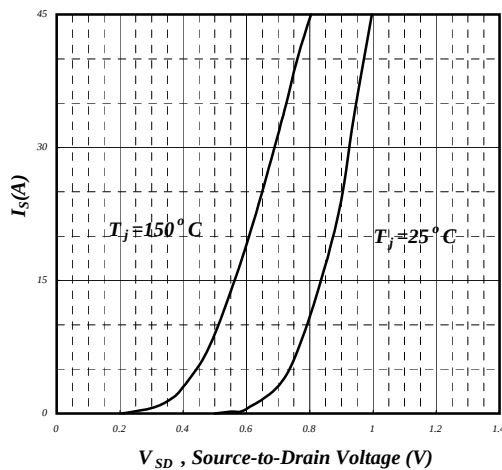
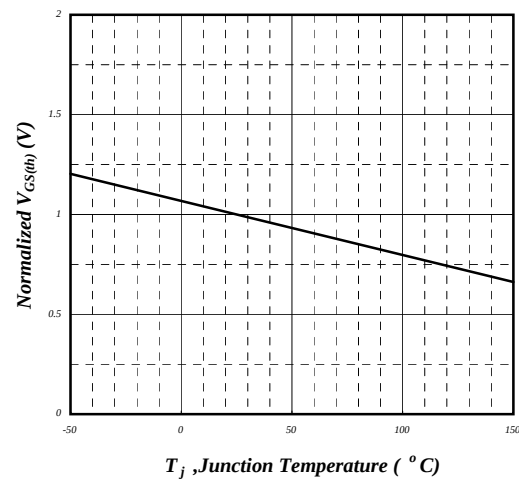
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=1mA$	100	-	-	V
$\Delta BV_{DSS}/\Delta T_j$	Breakdown Voltage Temperature Coefficient	Reference to $25^{\circ}\text{C}, I_D=1mA$	-	0.09	-	$V/^{\circ}\text{C}$
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=10V, I_D=30A$	-	-	15	$m\Omega$
		$V_{GS}=4.5V, I_D=16A$	-	-	21	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	1	-	3	V
g_{fs}	Forward Transconductance	$V_{DS}=10V, I_D=30A$	-	52	-	S
I_{DSS}	Drain-Source Leakage Current ($T_j=25^{\circ}\text{C}$)	$V_{DS}=100V, V_{GS}=0V$	-	-	10	μA
	Drain-Source Leakage Current ($T_j=150^{\circ}\text{C}$)	$V_{DS}=80V, V_{GS}=0V$	-	-	100	μA
I_{GSS}	Gate-Source Leakage	$V_{GS}= \pm 20V$	-	-	± 100	nA
Q_g	Total Gate Charge ²	$I_D=30A$	-	69	110.4	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=80V$	-	12	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	$V_{GS}=4.5V$	-	39	-	nC
$t_{d(on)}$	Turn-on Delay Time ²	$V_{DS}=50V$	-	12	-	ns
t_r	Rise Time	$I_D=30A$	-	75	-	ns
$t_{d(off)}$	Turn-off Delay Time	$R_G=10\Omega, V_{GS}=10V$	-	220	-	ns
t_f	Fall Time	$R_D=1.6\Omega$	-	250	-	ns
C_{iss}	Input Capacitance	$V_{GS}=0V$	-	5690	9100	pF
C_{oss}	Output Capacitance	$V_{DS}=25V$	-	540	-	pF
C_{rss}	Reverse Transfer Capacitance	$f=1.0MHz$	-	310	-	pF
R_g	Gate Resistance	$f=1.0MHz$	-	1.1	-	Ω

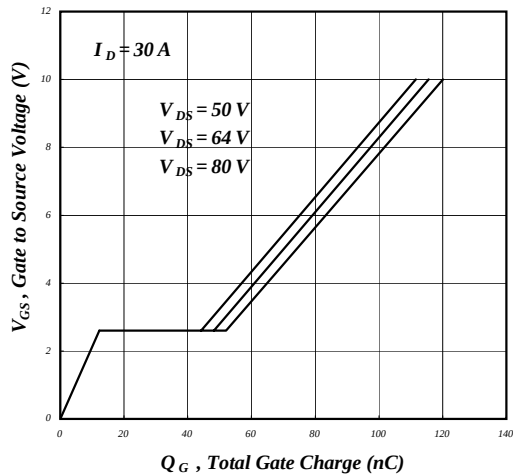
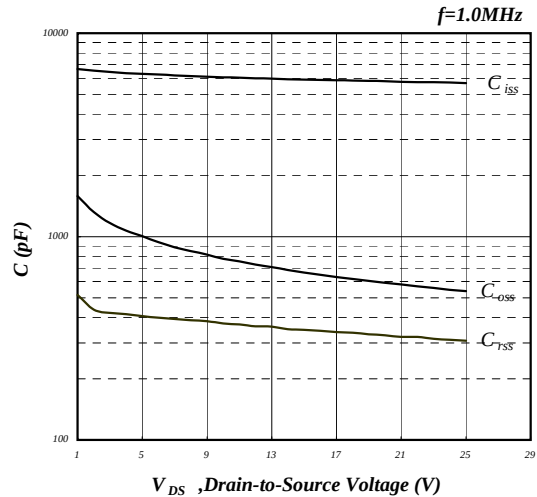
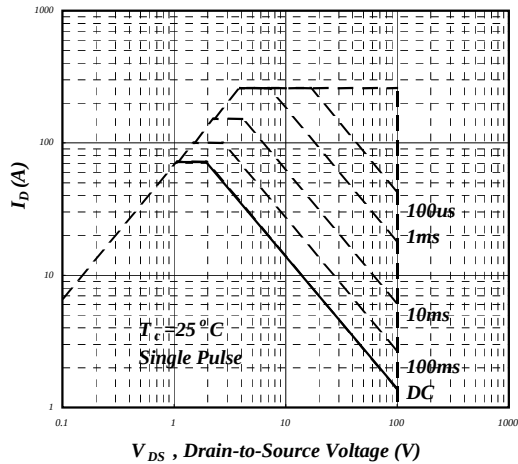
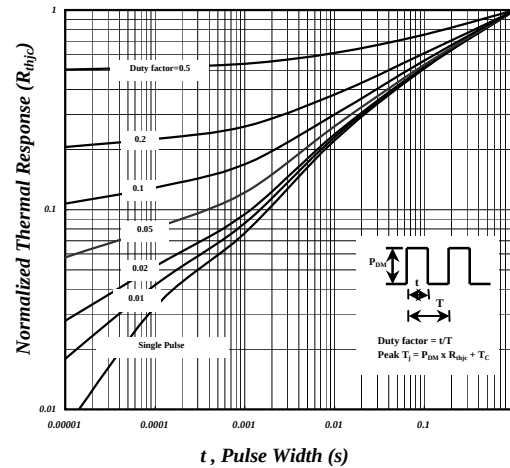
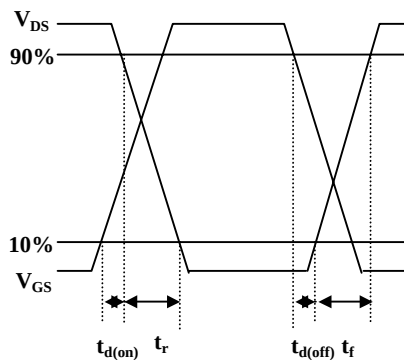
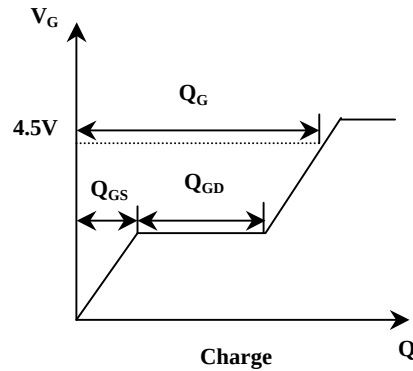
Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage ²	$I_S=30A, V_{GS}=0V$	-	-	1.3	V
t_{rr}	Reverse Recovery Time ²	$I_S=30A, V_{GS}=0V$	-	51	-	ns
Q_{rr}	Reverse Recovery Charge	$di/dt=100A/\mu s$	-	74	-	nC

Notes:

1. Pulse width limited by safe operating area.
2. Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.


Fig 1. Typical Output Characteristics

Fig 2. Typical Output Characteristics

Fig 3. On-Resistance v.s. Gate Voltage

**Fig 4. Normalized On-Resistance
v.s. Junction Temperature**

**Fig 5. Forward Characteristic of
Reverse Diode**

**Fig 6. Gate Threshold Voltage v.s.
Junction Temperature**


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

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