Elektronische Bauelemente

SSE75N03

75 A, 25 V, $R_{DS(ON)}$ 4.5 mΩ
N-Channel Enhancement Mode Power Mos.FET

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

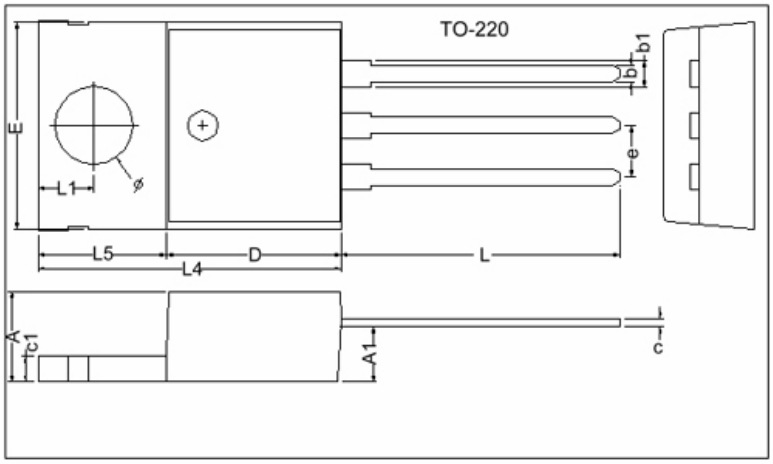
DESCRIPTION

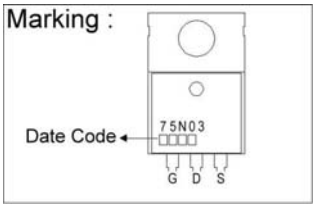
The SSE75N03 used advanced design and process to achieve low gate charge, low on-resistance and fast switching performance. The through-hole version (TO-220) is available for low-profile applications and suited for low voltage applications such as DC/DC converters.

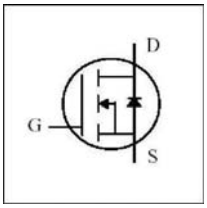
FEATURES

- Low Gate Charge
- Simple Drive Requirement
- Fast Switching

PACKAGE DIMENSIONS







REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.40	4.80	c1	1.25	1.45
b	0.76	1.00	b1	1.17	1.47
c	0.36	0.50	L	13.25	14.25
D	8.60	9.00	e	2.54 REF.	
E	9.80	10.4	L1	2.60	2.89
L4	14.7	15.3	Ø	3.71	3.96
L5	6.20	6.60	A1	2.60	2.80

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	25	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current,V_{GS}@ 4.5V	I_D @Ta=25℃	75	A
Drain Current,V_{GS}@ 4.5V	I_D @Ta=100℃	62.5	A
Pulsed Drain Current[1]	I_{DM}	350	A
Total Power Dissipation	P_D @Tc=25℃	96	W
Linear Derating Factor		0.76	W/°C
Single Pulse Avalanche Energy[2]	E_{AS}	400	mJ
Single Pulse Avalanche Current	I_{AS}	40	A
Operating Junction and Storage Temperature Range	Tj, Tstg	-55 ~ +150	°C

THERMAL DATA

Parameter		Symbol	Value	Unit
Thermal Resistance Junction-case	Max.	Rθj-case	1.3	°C/W
Thermal Resistance Junction-ambient	Max.	Rθj-amb	62	°C/W

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage	BV_{DSS}	25	-	-	V	V_{GS}=0, I_D=250uA
Breakdown Voltage Temp. Coefficient	$\triangle BV_{DSS}/\triangle Tj$	-	0.02	-	V/°C	Reference to 25℃, I_D=1mA
Gate Threshold Voltage	$V_{GS(th)}$	1.0	-	3.0	V	V_{DS}=V_{GS}, I_D=250uA
Forward Transconductance	g_{fs}	-	29	-	S	V_{DS}=10V, I_D=30A
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current(Tj=25℃)	I_{DSS}	-	-	1	uA	V_{DS}=25V, V_{GS}=0
Drain-Source Leakage Current(Tj=150℃)		-	-	25	uA	V_{DS}=20V, V_{GS}=0
Static Drain-Source On-Resistance[3]	$R_{DS(ON)}$	-	3.7	4.5	mΩ	V_{GS}=10V, I_D=40A
		-	6.0	7		V_{GS}=4.5V, I_D=30A
Total Gate Charge[3]	Q_g	-	33	-	nC	I_D=30A V_{DS}=20V V_{GS}=4.5V
Gate-Source Charge	Q_{gs}	-	9	-		
Gate-Drain (“Miller”) Change	Q_{gd}	-	15	-		
Turn-on Delay Time[3]	$T_{d(on)}$	-	10	-	ns	V_{DS}=15V I_D=30A V_{GS}=10V R_G=3.3Ω R_D=0.5Ω
Rise Time	T_r	-	80	-		
Turn-off Delay Time	$T_{d(off)}$	-	37	-		
Fall Time	T_f	-	85	-		
Input Capacitance	C_{iss}	-	2070	-	pF	V_{GS}=0V V_{DS}=25V f=1.0MHz
Output Capacitance	C_{oss}	-	990	-		
Reverse Transfer Capacitance	C_{rss}	-	300	-		

SOURCE-DRAIN DIODE

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage[2]	V_{SD}	-	-	1.5	V	I_S=20A, V_{GS}=0V
Reverse Recovery Time[3]	T_{RR}	-	50	-	Ns	I_S=30A, V_{GS}=0V
Reverse Recovery Charge	Q_{RR}	-	51	-	nC	dI/dt=100A/us

Notes: 1. Pulse width limited by safe operating area.
2. Staring Tj=25°C, V_{DD}=20V, L=0.1mH, R_G=25Ω, I_{AS}=10A.
3. Pulse width≦300us, duty cycle≦2%.

CHARACTERISTIC CURVE

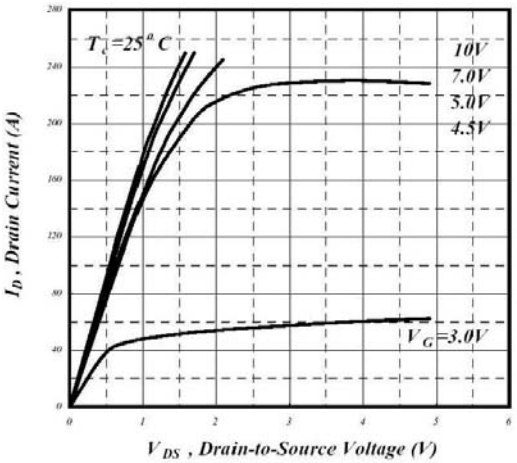


Fig 1. Typical Output Characteristics

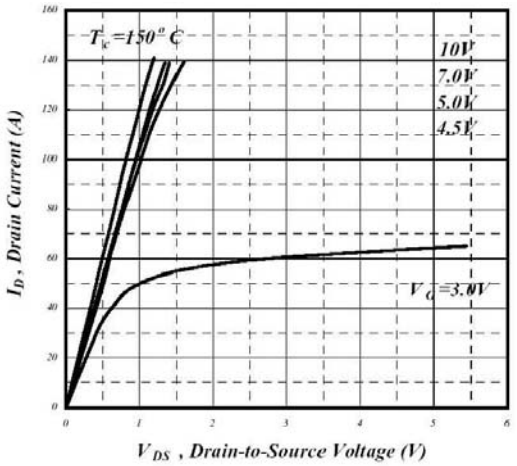


Fig 2. Typical Output Characteristics

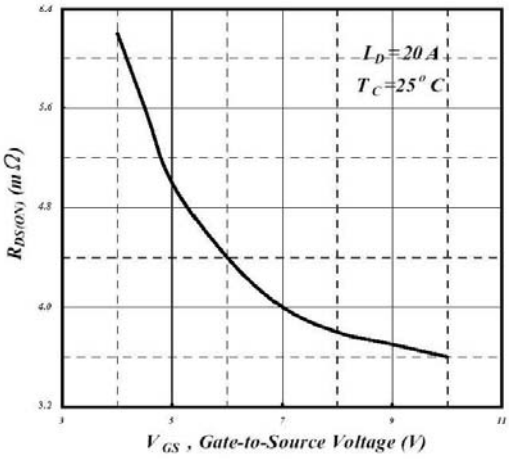


Fig 3. On-Resistance v.s. Gate Voltage

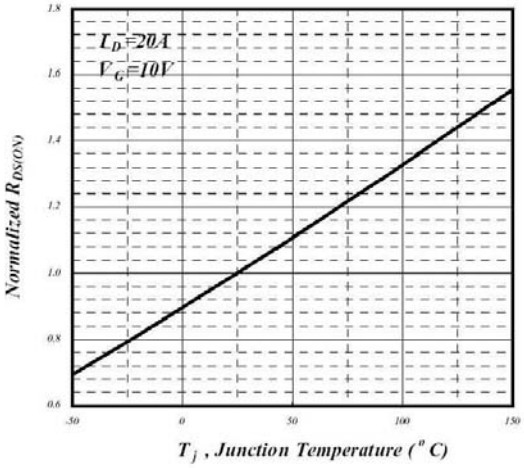


Fig 4. Normalized On-Resistance v.s. Junction Temperature

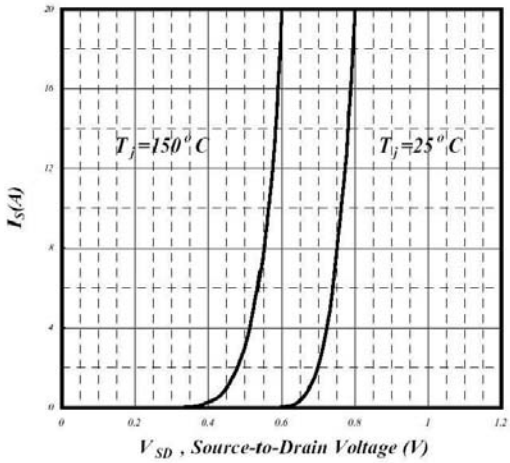


Fig 5. Forward Characteristics of Reverse Diode

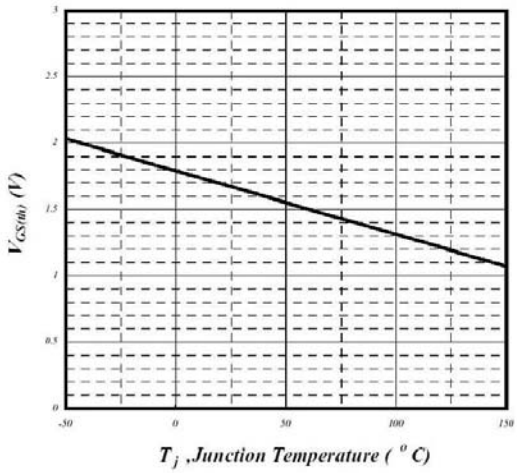


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

CHARACTERISTIC CURVE

f=1.0MHz

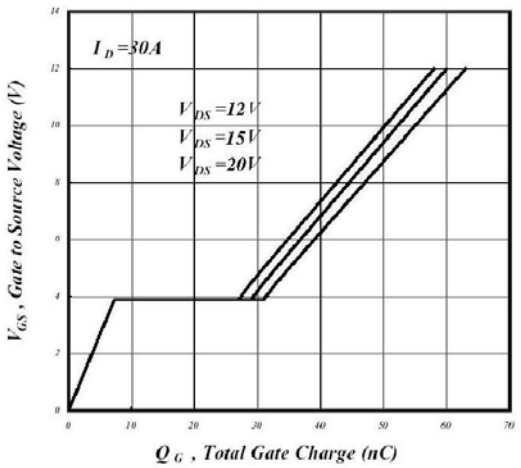


Fig 7. Gate Charge Characteristics

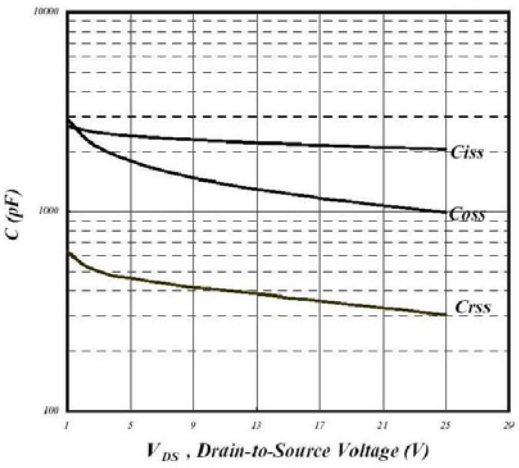


Fig 8. Typical Capacitance Characteristics

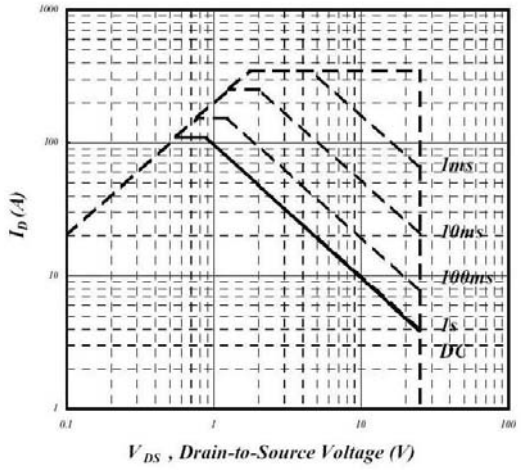


Fig 9. Maximum Safe Operating Area

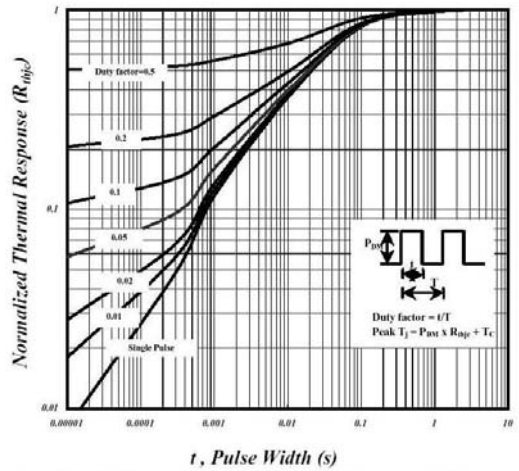


Fig 10. Effective Transient Thermal Impedance

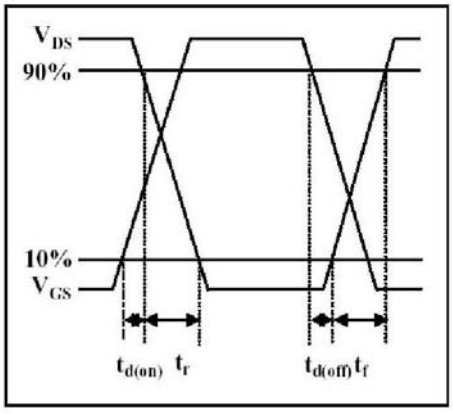


Fig 11. Switching Time Waveform

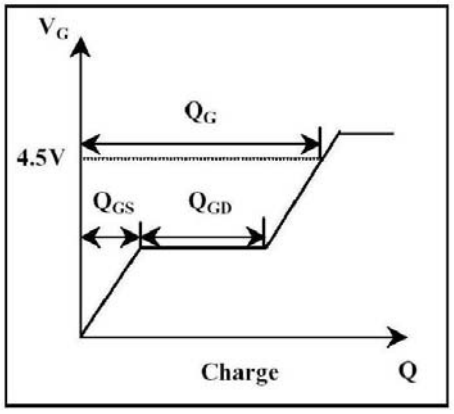


Fig 12. Gate Charge Waveform