Elektronische Bauelemente

SSE04N03

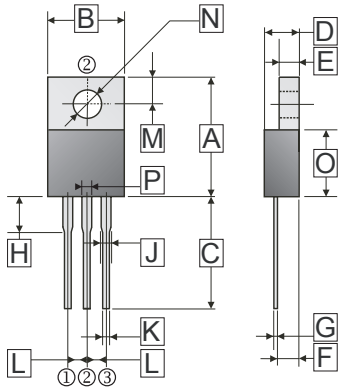
80 A, 25 V, $R_{DS(ON)}$ 5 mΩ
N-Channel Logic Level
Enhancement Mode Power Mos.FET

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

DESCRIPTION

The SSE04N03 provide the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost-effectiveness.
The through-hole version (TO-220) is available for low-profile applications and suited for low voltage applications such as DC/DC converters.

TO-220



Dimensions in millimeters

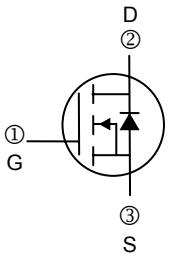
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	14.22	16.51	J	1.09	1.78
B	9.65	10.67	K	0.38	1.02
C	12.70	14.73	L	2.39	2.69
D	3.56	4.90	M	2.50	3.43
E	0.51	1.45	N	3.10	4.09
F	2.03	2.92	O	8.38	9.65
G	0.31	0.76	P	0.89	1.45
H	4.93 (TYP)				

FEATURES

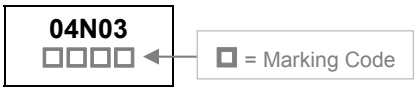
- Low On-resistance
- Simple Drive Requirement
- Fast Switching Characteristic

PACKAGING INFORMATION

Weight: 1.93 g (Approximate)



MARKING CODE



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	25	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D @Tc=25℃	80	A
Continuous Drain Current	I_D @Tc=100℃	50	A
Pulsed Drain Current[1]	I_{DM}	170	A
Total Power Dissipation	P_D @Tc=25℃	96	W
Linear Derating Factor		0.768	W/°C
Single Pulse Avalanche Energy[2]	E_{AS}	140	mJ
Repetitive Avalanche Energy (L=0.05mH, duty≦1%)	E_{AR}	40	mJ
Single Pulse Avalanche Current	I_{AS}	53	A
Operating Junction and Storage Temperature Range	Tj, Tstg	-55 ~ +175	°C

THERMAL DATA

Parameter		Symbol	Value	Unit
Thermal Resistance Junction-Case	Max.	$R_{\theta JC}$	1.3	°C/W
Thermal Resistance Junction-Ambient	Max.	$R_{\theta JA}$	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
Gate Threshold Voltage		$V_{GS(th)}$	1.0	1.5	3.0	V	V_{DS}=V_{GS}, I_D=250uA
Forward Transconductance[3]		g_{fs}	-	30	-	S	V_{DS}=5V, I_D=24A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	1	uA	V_{DS}=20V, V_{GS}=0
	T_J=150℃		-	-	25	uA	V_{DS}=20V, V_{GS}=0
Static Drain-Source On-Resistance[3]		$R_{DS(ON)}$	-	-	4	mΩ	V_{GS}=10V, I_D=30A
			-	-	6.5		V_{GS}=5V, I_D=24A
On-State Drain Current[3]		$I_{D(ON)}$	80	-	-	A	V_{DS}=10V, V_{GS}=10V
Total Gate Charge[3]	V_{GS}=10V	Q_g	-	53	-	nC	I_D=30A V_{DS}=15V V_{GS}=10V
	V_{GS}=5V	Q_g	-	30	-		
Gate-Source Charge		Q_{gs}	-	8	-		
Gate-Drain (“Miller”) Change		Q_{gd}	-	17	-		
Turn-on Delay Time[3]		$T_{d(on)}$	-	22	-	ns	V_{DS}=15V I_D=25A V_{GS}=10V R_{GS}=2.7Ω
Rise Time		T_r	-	16	-		
Turn-off Delay Time		$T_{d(off)}$	-	65	-		
Fall Time		T_f	-	10	-		
Input Capacitance		C_{iss}	-	4840	-	pF	V_{GS}=0V V_{DS}=15V f=1.0MHz
Output Capacitance		C_{oss}	-	620	-		
Reverse Transfer Capacitance		C_{rss}	-	435	-		
Gate Resistance		R_G	-	1.2	-	Ω	V_{GS}=15mV, V_{DS}=0, f=1MHz

SOURCE-DRAIN DIODE

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Forward On Voltage[3]	V_{SD}	-	-	1.3	V	I_S=80A, V_{GS}=0V, T_J=25°C
Continuous Source Current (Body Diode)	I_S	-	-	80	A	
Pulse Source Current (Body Diode)[1]	I_{SM}	-	-	170	A	
Reverse Recovery Time	Trr	-	32	-	ns	I_S=80A, V_{GS}=0V
Reverse Recovery Charge	Qrr	-	12	-	nC	dI/dt=100A/μs

Notes: 1. Pulse width limited by maximum junction temperature.
2. Starting Tj=25°C, V_{DD}=20V, L=0.1mH, R_G=25Ω, I_{AS}=53A.
3. Pulse width 300μs, duty cycle≦2%.

CHARACTERISTIC CURVE

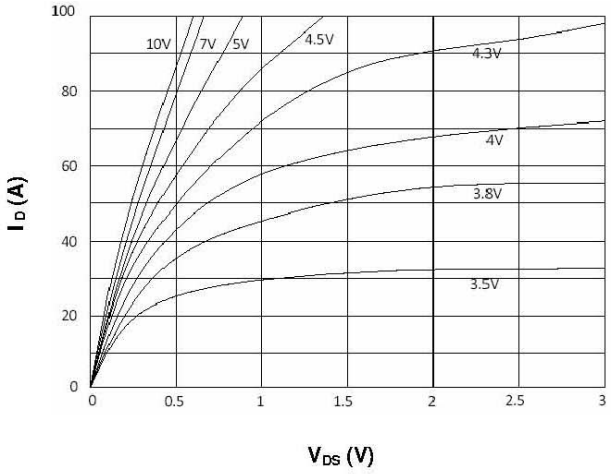


Fig 1. Typical Output Characteristics

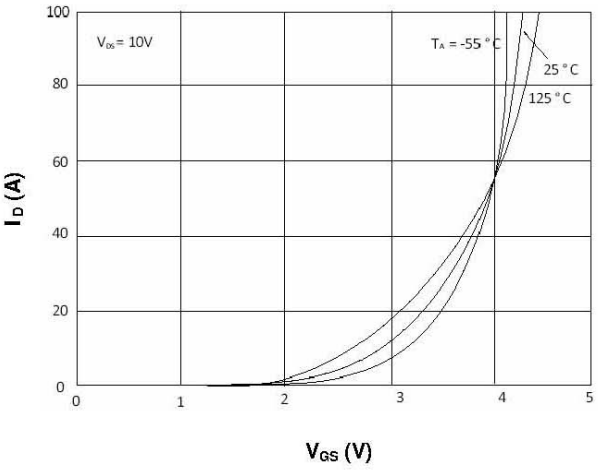


Fig 2. Transfer Characteristics

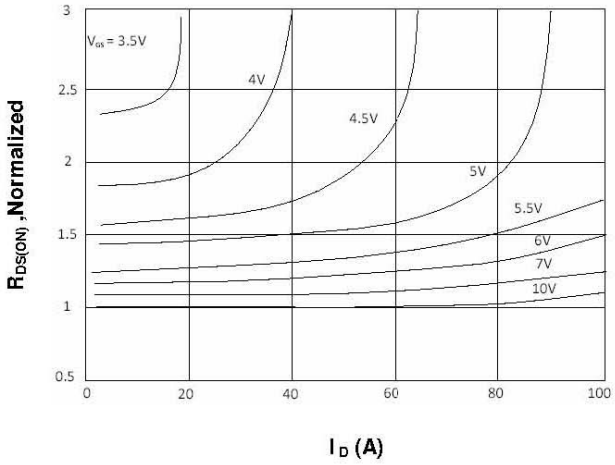


Fig 3. On-Resistance vs. Drain Current and Gate Voltage

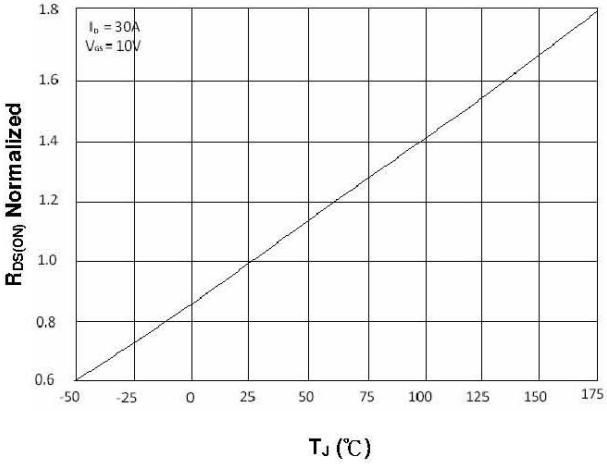


Fig 4. On-Resistance vs. Junction Temperature

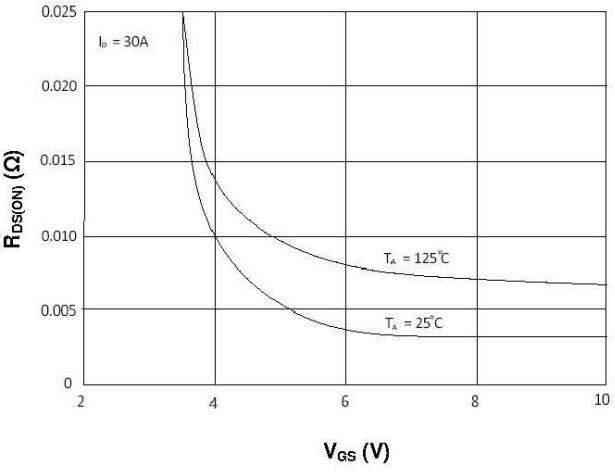


Fig 5. On-Resistance vs. Gate-Source Voltage

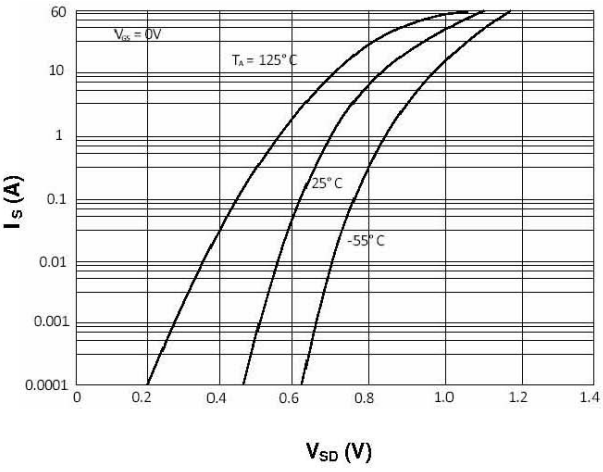


Fig 6. Body Diode Characteristics

CHARACTERISTIC CURVE

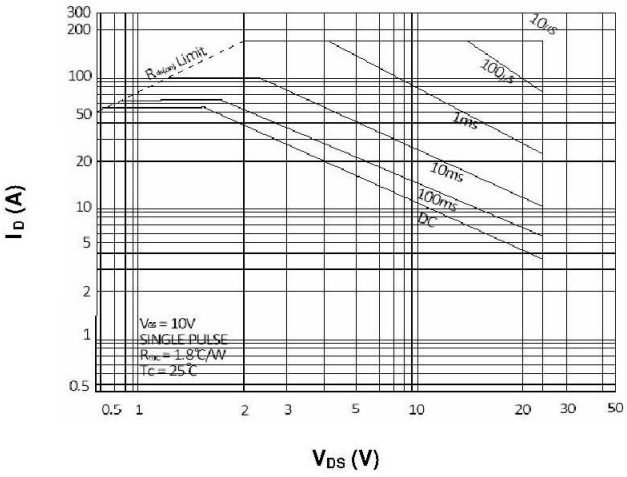


Fig 7. Maximum Safe Operating Area

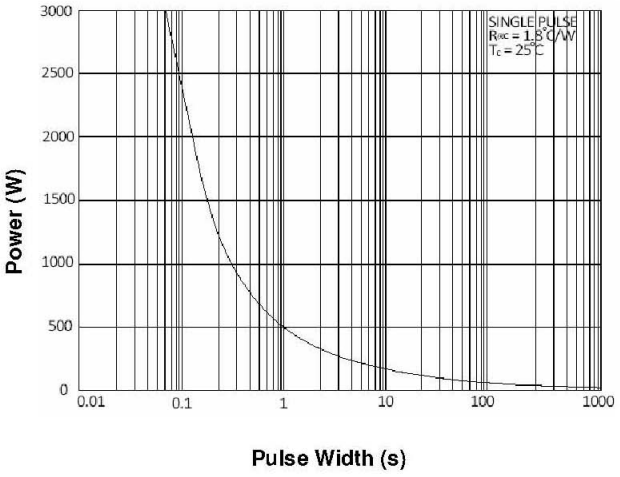


Fig 8. Single Pulse Maximum Power Dissipation

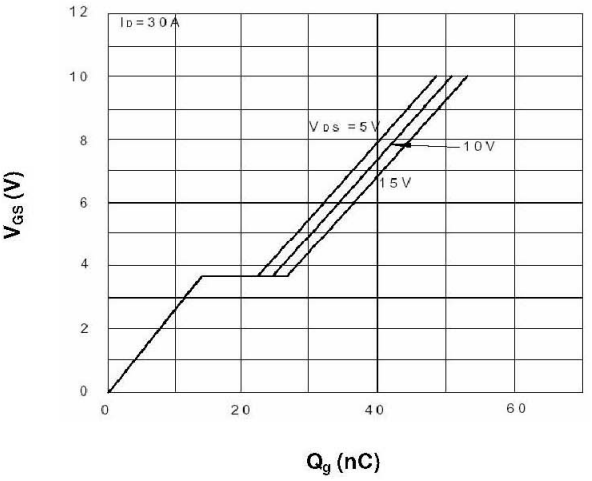


Fig 9. Gate Charge Characteristics

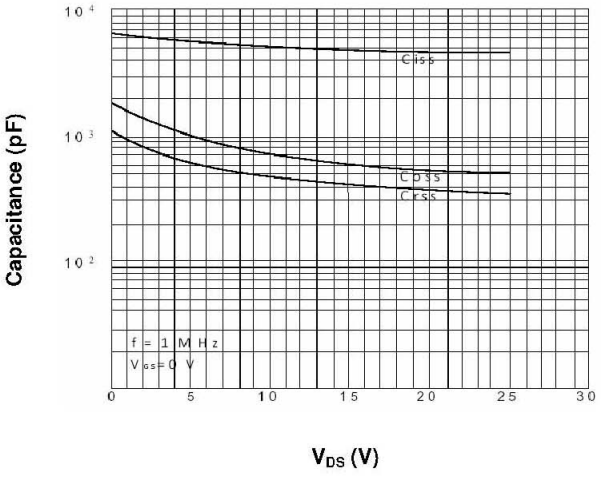


Fig 10. Typical Capacitance Characteristics

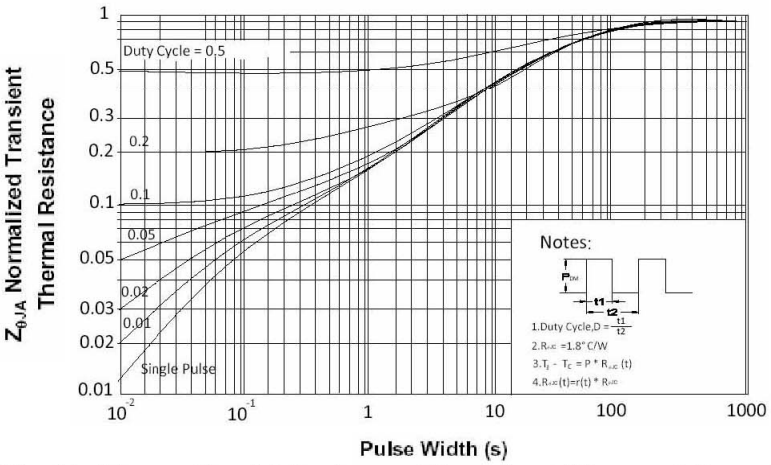


Fig 11. Normalized Maximum Transient Thermal Impedance