Elektronische Bauelemente

SSE90N04-03P

90A , 40V , $R_{DS(ON)}$ 5 mΩ

N-Channel Enhancement Mode MOSFET

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

DESCRIPTION

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $R_{DS(on)}$ and to ensure minimal power loss and heat dissipation.

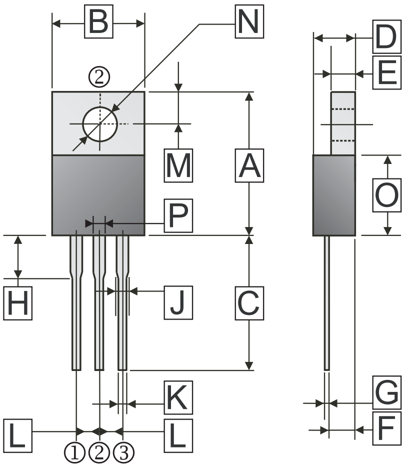
FEATURES

- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Low thermal impedance copper leadframe TO-220P saves board space.
- Fast Switch Speed.
- High performance trench technology.

APPLICATION

DC-DC converters and power management such as computers, printers, and power supplies .

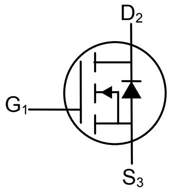
TO-220P



Dimensions in millimeters

REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	14.5	15.8	J	1.15	1.45
B	9.70	10.6	K	0.65	0.94
C	12.25	14.2	L	2.40	2.65
D	4.40	4.80	M	2.59	2.98
E	1.15	1.37	N	ϕ3.7	ϕ3.9
F	2.20	3.00	O	8.50	9.65
G	0.30	0.60	P	1.15	1.45
H	3.30	4.10			

N-Channel



ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise specified)

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1]	T_C=25°C	I_D	90	A
Pulsed Drain Current [2]		I_{DM}	240	A
Continuous Source Current (Diode Conduction) [1]		I_S	90	A
Power Dissipation [1]	T_C=25°C	P_D	300	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~175	°C
Thermal Resistance Rating				
Maximum Junction to Ambient [1]		$R_{\theta JA}$	62.5	°C / W
Maximum Junction to Case		$R_{\theta JC}$	0.5	

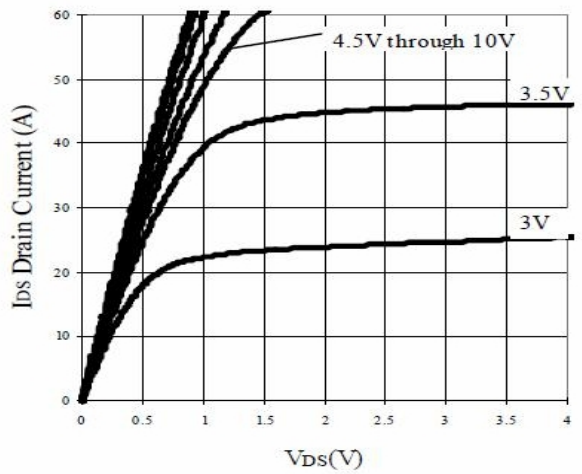
Notes:
1 Package Limited.
2 Pulse width limited by maximum junction temperature.

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

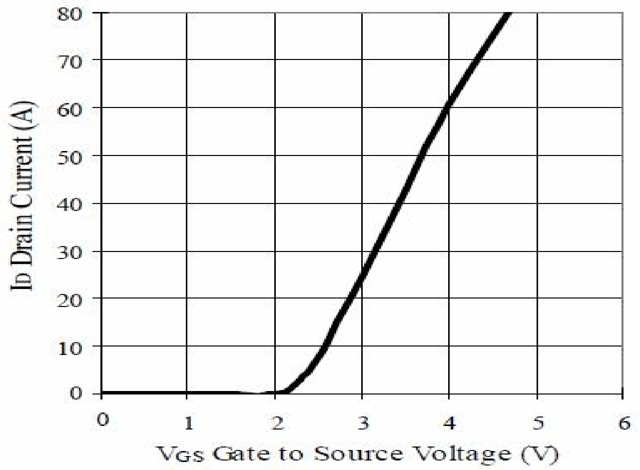
Parameter	Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	1	-	-	V	V_{DS}=V_{GS}, I_D=250μA
Gate-Body Leakage	I_{GSS}	-	-	±100	nA	V_{DS}=0, V_{GS}=20V
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	V_{DS}=32V, V_{GS}=0
		-	-	25		V_{DS}=32V, V_{GS}=0, T_J=55°C
On-State Drain Current [1]	$I_{D(on)}$	120	-	-	A	V_{DS}=5V, V_{GS}=10V
Drain-Source On-Resistance [1]	$R_{DS(ON)}$	-	-	5	mΩ	V_{GS}=10V, I_D=30A
		-	-	7.5		V_{GS}=4.5V, I_D=20A
Forward Transconductance [1]	g_{fs}	-	30	-	S	V_{DS}=15V, I_D=30A
Diode Forward Voltage	V_{SD}	-	1.1	-	V	I_S=34A, V_{GS}=0
Dynamic [2]						
Total Gate Charge	Q_g	-	4	-	nC	V_{DS}=15V, V_{GS}=4.5V, I_D=90A
Gate-Source Charge	Q_{gs}	-	1.1	-		
Gate-Drain Charge	Q_{gd}	-	1.4	-		
Turn-on Delay Time	$T_{d(on)}$	-	16	-	nS	V_{DD}=25V, V_{GEN}=10V, R_L=25Ω, I_D=34A
Rise Time	T_r	-	5	-		
Turn-off Delay Time	$T_{d(off)}$	-	23	-		
Fall Time	T_f	-	3	-		

Notes:
1 Pulse test：PW ≦ 300 μs duty cycle ≦ 2%.
2 Guaranteed by design, not subject to production testing.

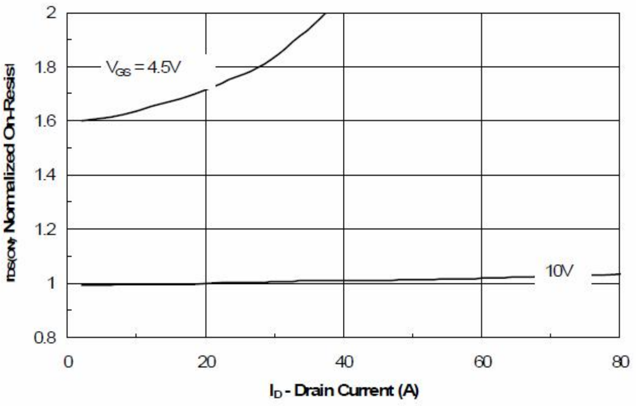
CHARACTERISTIC CURVES



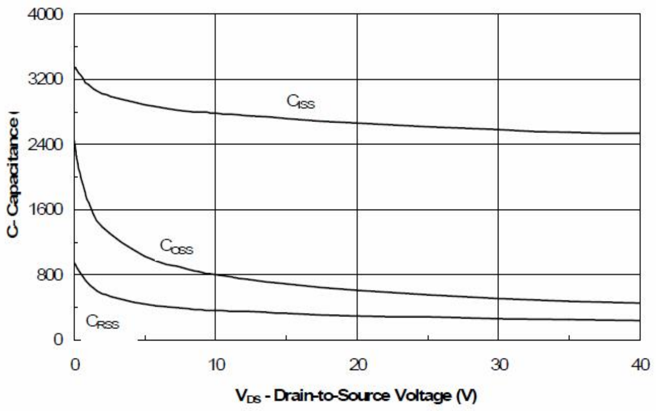
Output Characteristics



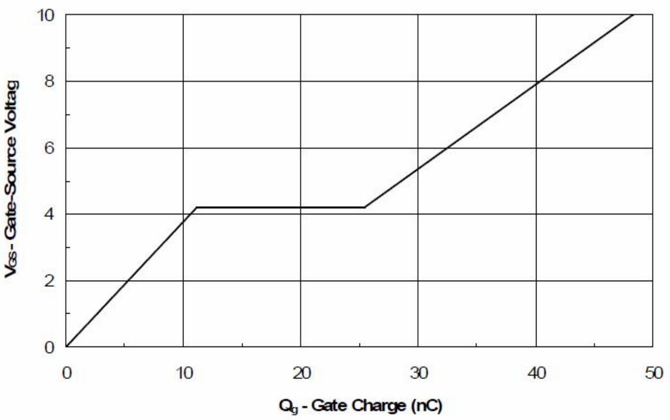
Transfer Characteristics



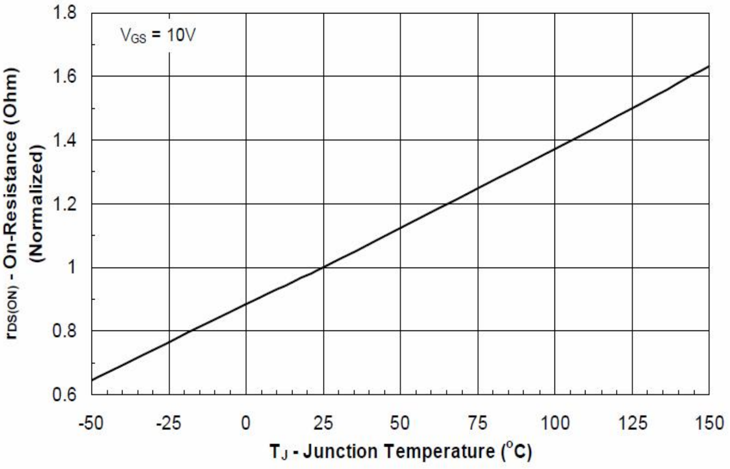
On Resistance vs. Drain Current



Capacitance

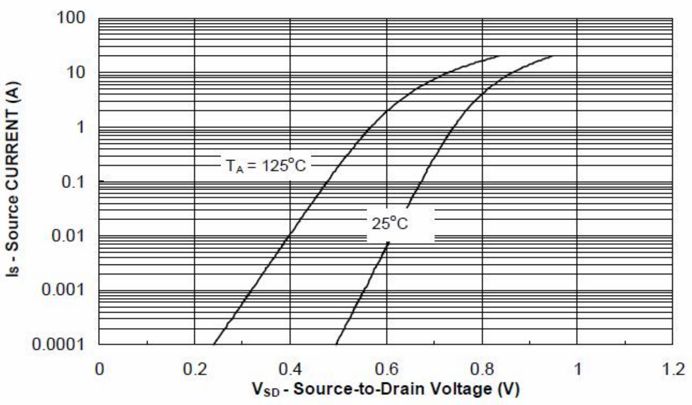


Gate Charge

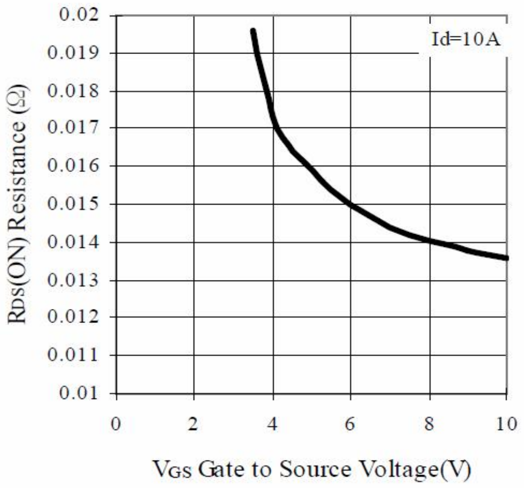


On-Resistance vs. Junction Temperature

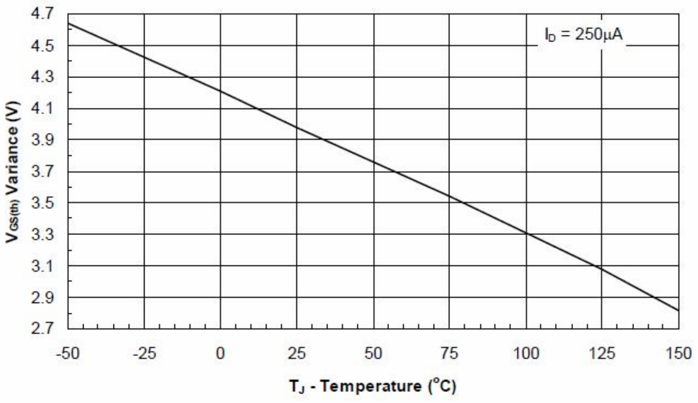
CHARACTERISTIC CURVES



Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

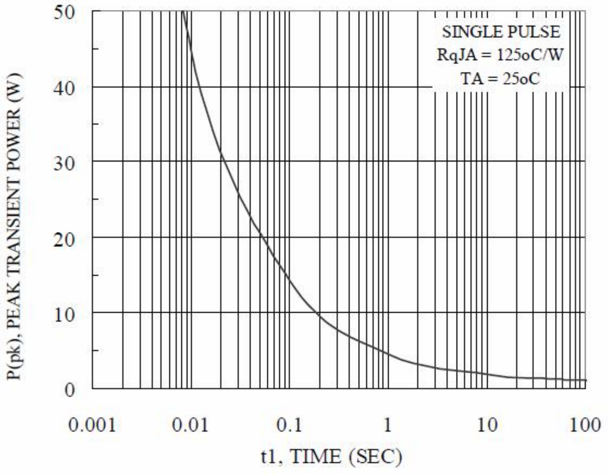


Figure 10. Single Pulse Maximum Power Dissipation

Normalized Thermal Transient Junction to Ambient

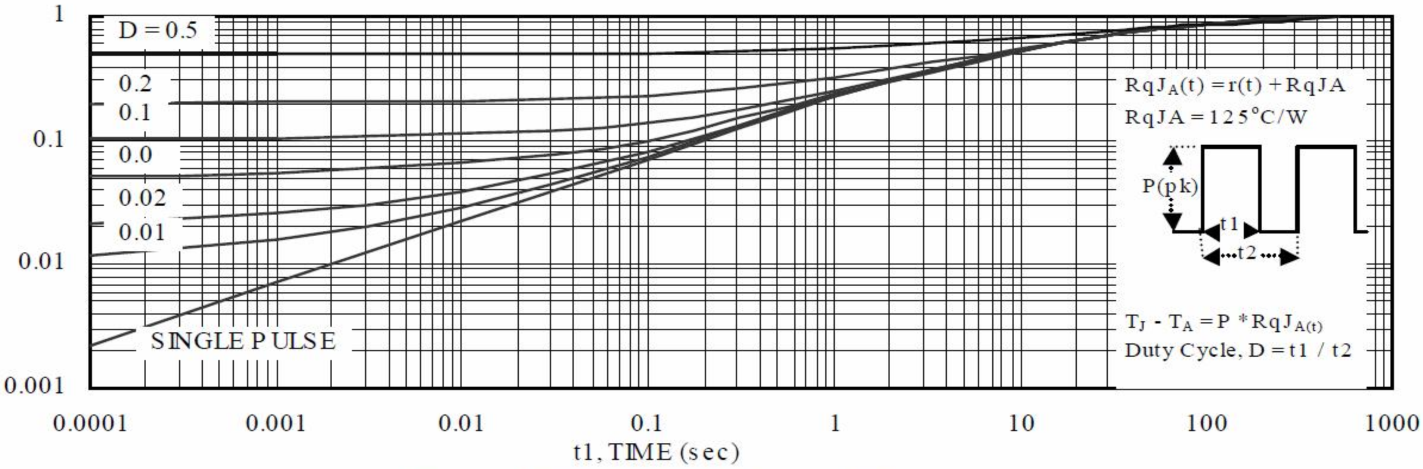


Figure 11. Transient Thermal Response Curve