SE8N65A
N-Channel Enhancement-Mode MOSFET

Revision: A

General Description

This type used advanced trench technology and design to provide excellent RDS(ON) with low gate charge. It can be used in a wide variety of application
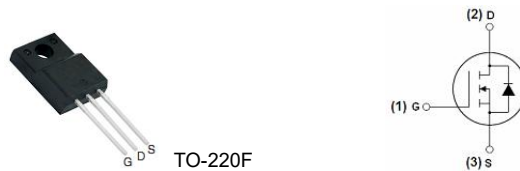
Features

For a single MOSFET

- V_{DS} = 650V
- $R_{DS(ON)}$ = 1.085Ω @ V_{GS}=10V

Pin configurations

See Diagram below

G D S   TO-220F

(2) D
(1) G
(3) S

Absolute Maximum Ratings

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DS}	650	V
Gate-Source Voltage		V_{GS}	±30	V
Avalanche Current[2]		I_{AR}	7.5	A
Drain Current	Continuous	I_D	8.0	A
	Pulsed		28	
Avalanche Energy Single Pulsed[3]		E_{AS}	420	mJ
Power Dissipation		P_D	48	W
Operating Junction Temperature Range		T_J	-55 to 150	℃

Thermal Resistance

Symbol	Parameter	Typ.	Max.	Units
$R_{\theta JA}$	Junction to Ambient		62.5	℃/W

SE8N65A

| Electrical Characteristics	(TJ=25℃ unless otherwise noted)					
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS (Note 2)						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$,	650			V
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=650V$, $V_{GS}=0V$			10	µA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=30V$			100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}$, $I_D=250\mu A$	2		4	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=2.1A$		1.085	1.30	Ω
DYNAMIC PARAMETERS						
C_{iss}	Input Capacitance	$V_{GS}=0V$, $V_{DS}=25V$, f=1MHz		1100	1430	pF
C_{oss}	Output Capacitance			135	175	pF
C_{rss}	Reverse Transfer Capacitance			16	21	pF
SWITCHING PARAMETERS						
Q_g	Total Gate Charge [2]	$V_{GS}=10V$, $V_{DS}=480V$, $I_D=7A$		29	38	nC
Q_{gs}	Gate Source Charge			7		nC
Q_{gd}	Gate Drain Charge			14.5		nC
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=325V$, $R_{GEN}=25Ω$ $I_D=7A$		30	70	ns
$t_{d(off)}$	Turn-Off Delay Time			80	170	ns
$t_{d(r)}$	Turn-On Rise Time			65	140	ns
$t_{d(f)}$	Turn-Off Fall Time			60	130	ns
Source-Drain Diode Characteristics						
V_{SD}	Drain-Source Diode Forward Voltage	$V_{GS}=0V$, $I_S=7A$			1.5	V
I_S	Max Drain-Source Diode Current				7.5	A
I_{SM}	Max Pulse Drain-Source Current				28	A
t_{rr}	Reverse Recovery Time	VGS=0V, IS=7A $dI_F/dt=100A/\mu s$[1]		320		ns
Q_{RR}	Reverse Recovery Charge			2.4		µC

Typical Characteristics
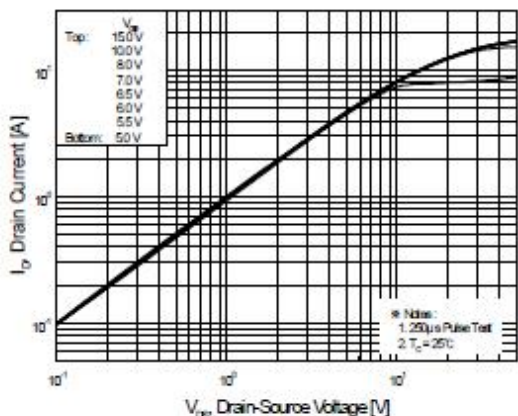
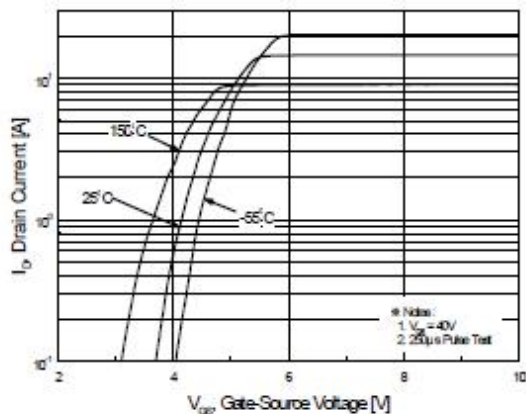Figure 1. On-Region Characteristics

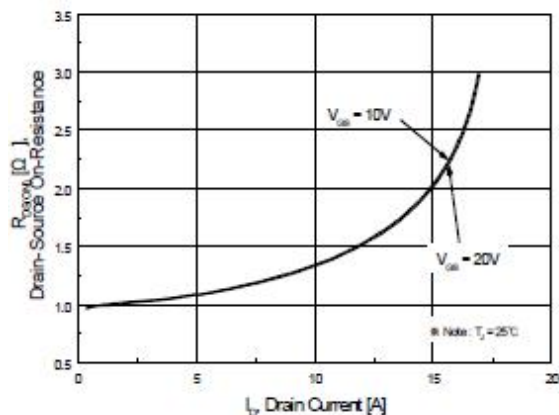Figure 2. Transfer Characteristics

Figure 3. On-Resistance Variation vs
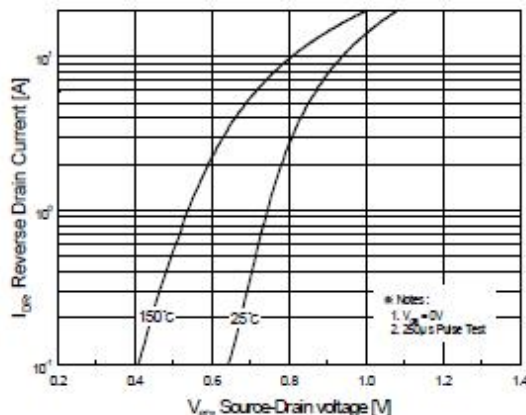Drain Current and Gate Voltage

Figure 4. Body Diode Forward Voltage
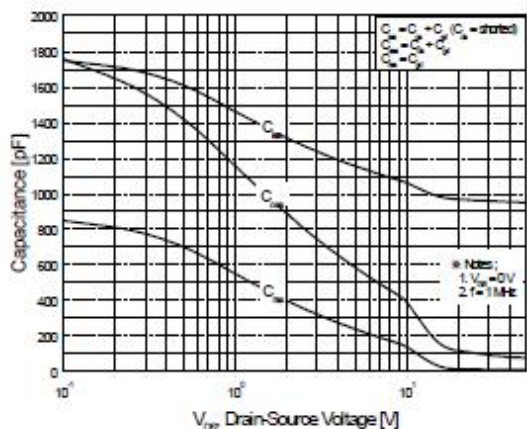Variation with Source Current
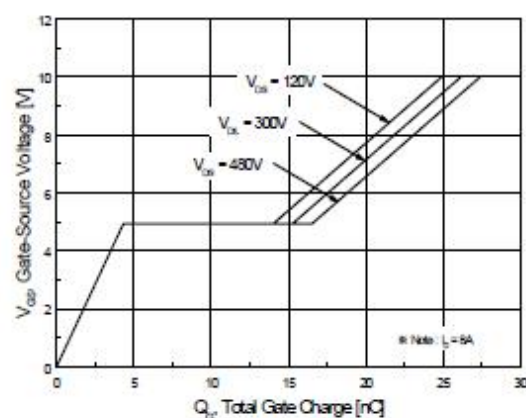and Temperature

Figure 5. Capacitance Characteristics

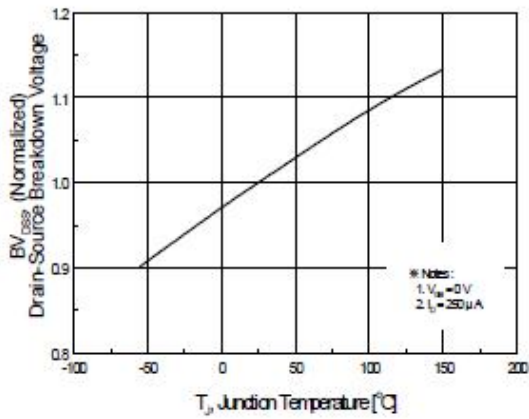Figure 6. Gate Charge Characteristics

Typical Characteristics

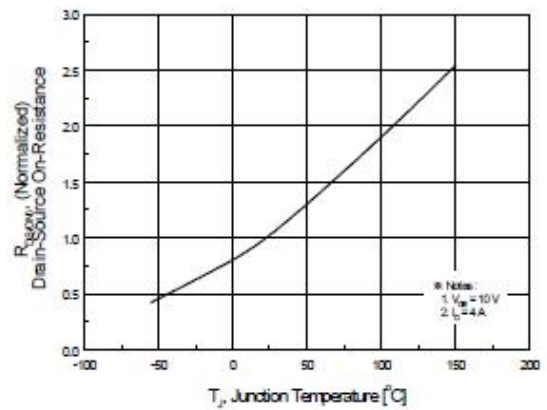Figure 7. Breakdown Voltage Variation
vs Temperature
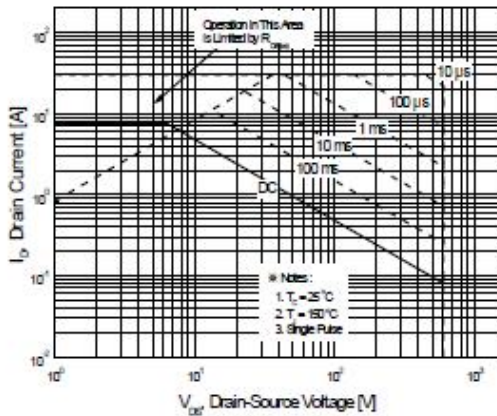
Figure 8. On-Resistance Variation
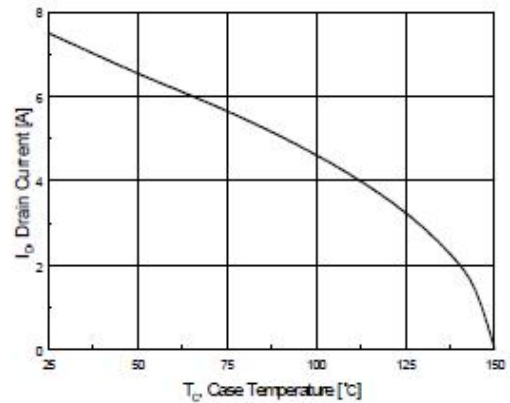vs Temperature

Figure 9-2. Maximum Safe Operating Area

Figure 10. Maximum Drain Current
vs Case Temperature

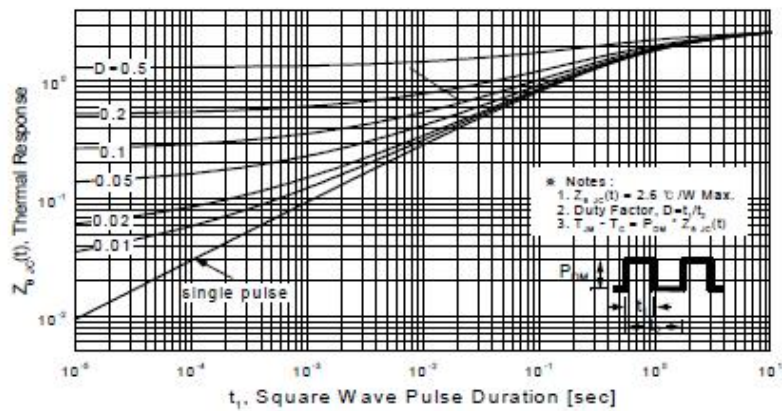Figure 11-2. Transient Thermal Response Curve

SE8N65A

Package Outline Dimension

TO-220F
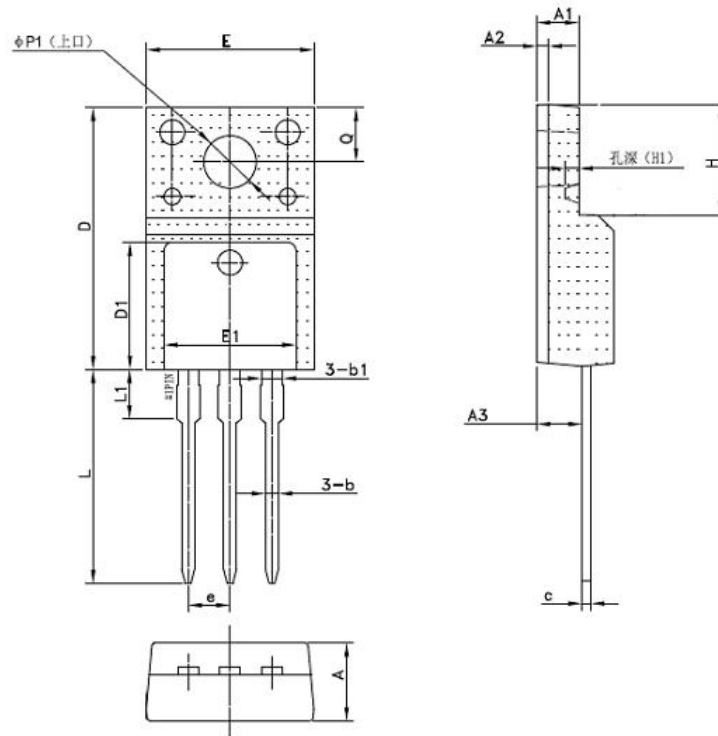
Symbol	Dimensions(mm)		
	Min.	Typ.	Max.
A	4.50	4.70	4.90
A1	2.44	2.54	2.64
A2	0.60	0.70	0.80
A3	2.56	2.76	2.96
b	0.70	0.80	0.95
b1	-	1.28	-
c	0.45	0.50	0.65
D	15.67	15.87	16.07
D1	-	7.70	-
E	9.96	10.16	10.36
E1	-	8.00	-
e	2.54(BSC)		
H	6.50	6.70	6.90
(H1)	-	(0.81)	-
L	12.48	12.98	13.20
L1	-	2.93	-
ΦP1	2.98	3.18	3.38
Q	3.10	3.30	3.50

SE8N65A

SHANGHAI SINO-IC MICROELECTRONICS CO., LTD

Add: Building 3, Room 3401-03, No.200 Zhangheng Road, ZhangJiang Hi-Tech Park, Pudong, Shanghai 201203, China
Phone: +86-21-33932402   33932403   33932405   33933508   33933608
Fax: +86-21-33932401
Email: webmaster@sino-ic.net
Website: http://www.sino-ic.net

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