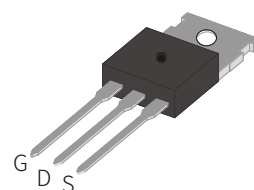
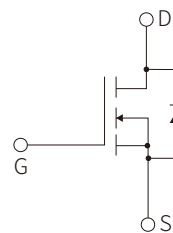


FEATURES

- | Low Gate Charge
- | Low Crss
- | Improved dv/dt Capability
- | Improved ESD Capability
- | 100% Avalanche energy test



TO-220C



Schematic Symbol

APPLICATION

- | High efficiency switch mode power supplies
- | Electronic lamp ballasts
- | UPS

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

ABSOLUTE MAXIMUM RATINGS (T_A=25°C)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V _{DSS}	800	V
Continuous Drain Current	T _C =25°C	I _D	7*	A
	T _C =100°C		4.0*	A
Pulsed Drain Current (note1)		I _{DM}	28	A
Gate-Source Voltage		V _{GS}	±30	V
Avalanche Current (note1)		I _{AR}	7.0	A
Repetitive Avalanche Energy (note1)		E _{AR}	18	mJ
Single Pulsed Avalanche Energy (note2)		E _{AS}	418	mJ
Peak Diode Recovery (note3)		dv/dt	4.5	V/ns
Power Dissipation T _C =25°C		P _D	140	W
Power Dissipation Derating Factor Above 25°C		P _{D(DF)}	1.12	W/°C
Maximum Temperature for Soldering		T _L	300	°C
Operating Junction Temperature Range		T _J	150	°C
Storage Temperature Range		T _{STG}	-55 to +150	°C
Thermal Resistance, Junction to Case		R _{thjc}	0.89	°C/W
Thermal Resistance, Junction to Ambient		R _{thja}	62.5	°C/W

* Drain current limited by maximum junction temperature

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	800			V
Breakdown voltage temperature coefficient	$\Delta BV_{DSS} / \Delta T_J$	$I_D=250\mu A$, referenced to 25°C		0.7		V/°C
Zero Gate Voltage Drain current	I_{DSS}	$V_{DS}=800V, V_{GS}=0V, T_c=25^\circ C$			10	μA
		$V_{DS}=640V, T_c=125^\circ C$			100	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=30V, V_{DS}=0V$			100	nA
		$V_{GS}=-30V, V_{DS}=0V$			-100	nA
On-Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0		4.0	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=3.5A$			1.7	Ω
Forward Transconductance	g_{FS}	$V_{DS}=40V, I_D=3.5A$		5.0		S
Dynamic Characteristics						
Input capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V, f=1MHz$		1200		pF
Output capacitance	C_{oss}			125		pF
Reverse Transfer capacitance	C_{rss}			12		pF
Turn-on Delay Time	td(on)	$V_{DD}=400V, I_D=7A, R_G=25\Omega$ (note 4,5)		35		ns
Turn-On rise time	tr			100		ns
Turn-off Delay Time	td(off)			50		ns
Turn-off Fall time	tf			60		ns
Total gate charge	Q_g	$V_{DS}=640V, I_D=7A, V_{GS}=10V$ (note 4,5)		27		nC
Gate-source charge	Q_{gs}			8.2		nC
Gate-drain charge	Q_{gd}			11		nC
Maximum Continuous Drain-Source Diode Forward Current	I_s				7	A
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				28	A
Drain-Source Diode Forward Voltage	V_{SD}	$I_s=7A, V_{GS}=0V$			1.4	V
Reverse recovery time	Trr	$I_s=7A, V_{GS}=0V,$ $di_F/dt=100A/us$ (note 4)		650		ns
Reverse recovery Charge	Qrr			7.0		uC

Notes:

1: Pulse width limited by maximum junction temperature
 3: $I_{SD} \leq 7A, di/dt \leq 300A/\mu s, V_{DD} \leq BV_{DSS}$, Starting $T_J=25^\circ C$
 5: Essentially independent of operating temperature

2: $L=16mH, I_{AS}=7A, V_{DD}=50V, R_G=25\Omega$, Starting $T_J=25^\circ C$
 4: Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

CHARACTERISTIC CURVES

Fig.1 On-State Characteristics

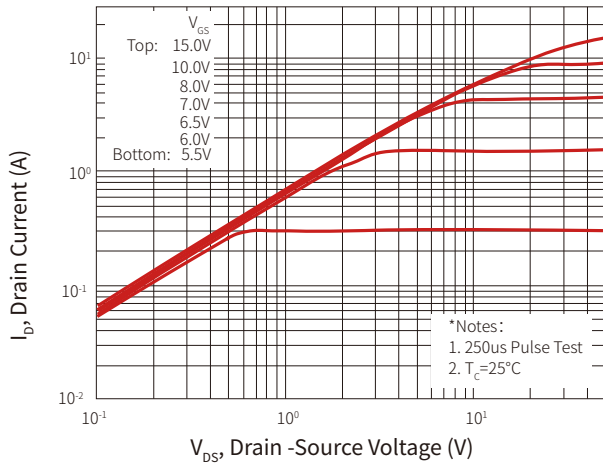


Fig.2 Transfer Characteristics

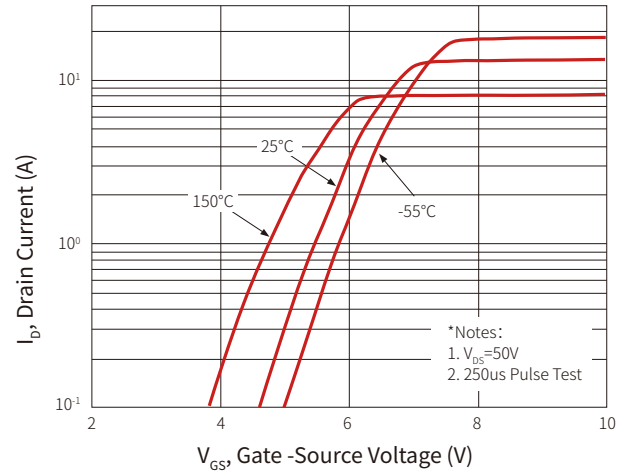


Fig.3 Breakdown Voltage Variation vs Temperature

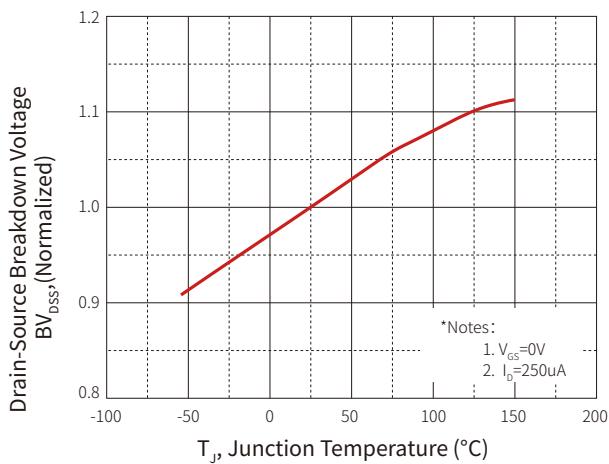


Fig.4 On-Resistance Variation vs Temperature

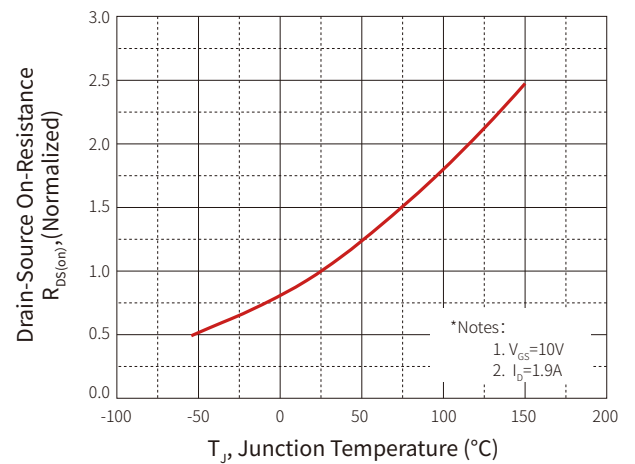


Fig.5 Capacitance Characteristics

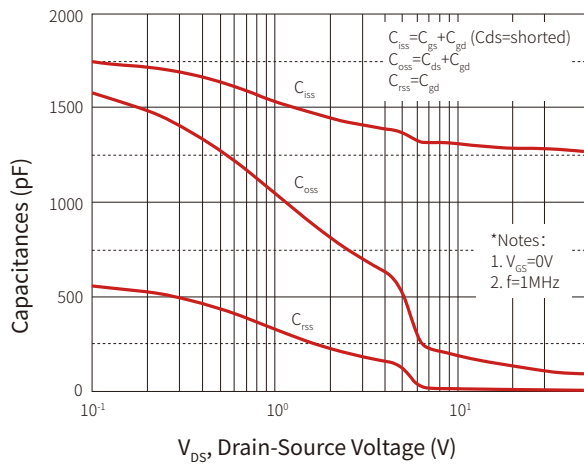


Fig. 6 Gate Charge Characteristics

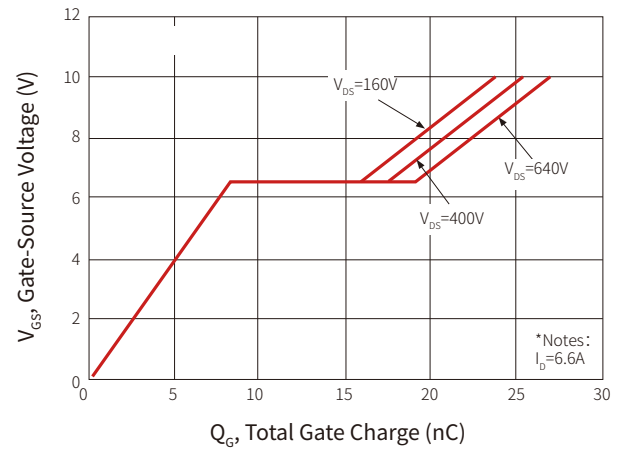


Fig.7 Maximum Safe Operating Area

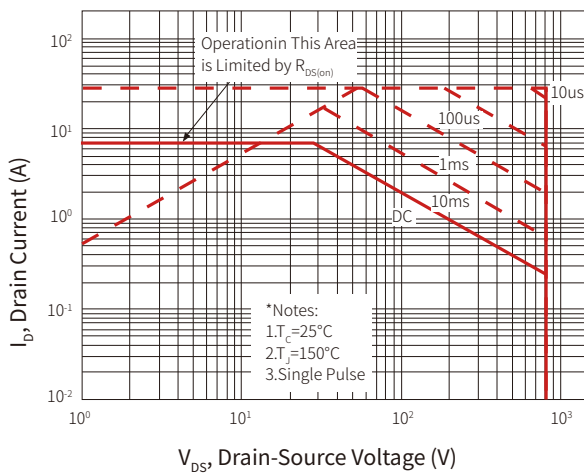


Fig.8 Maximum Drain Current vs Case Temperature

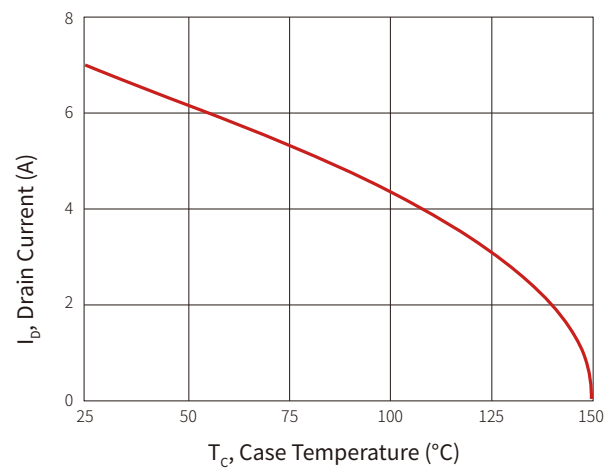


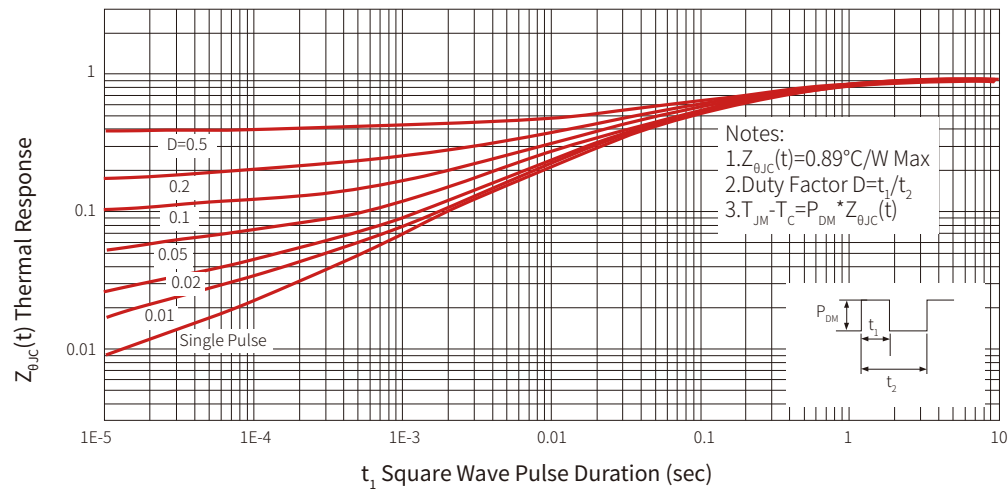
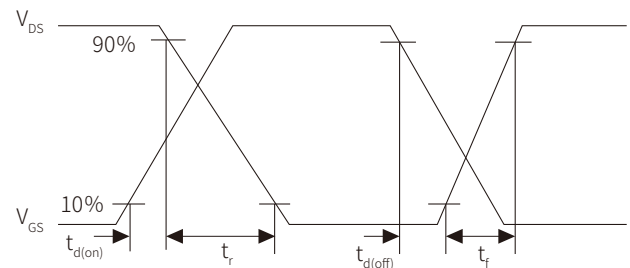
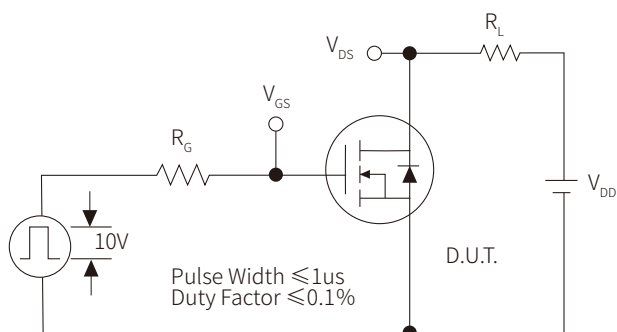
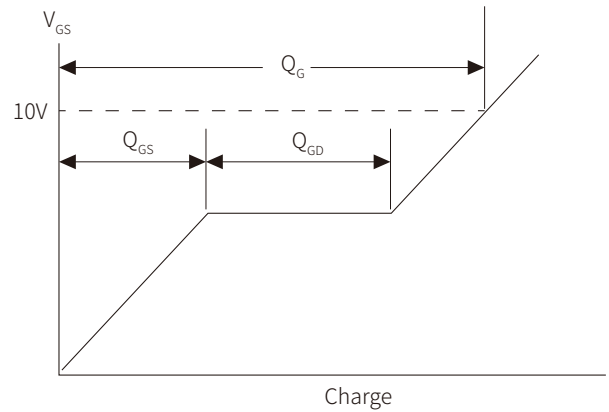
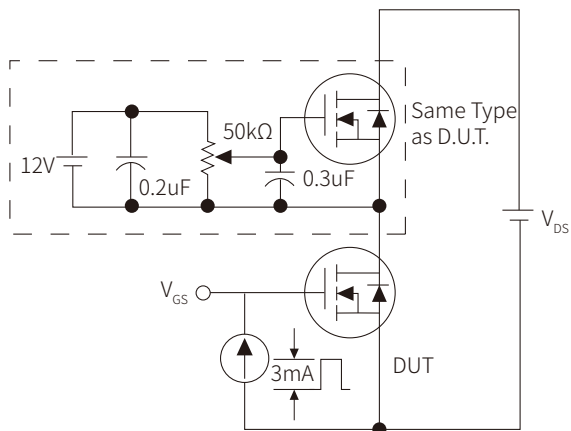
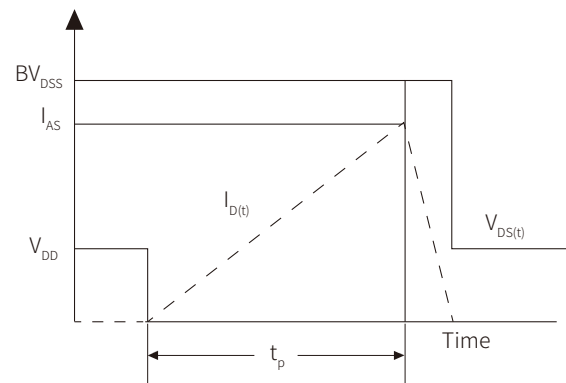
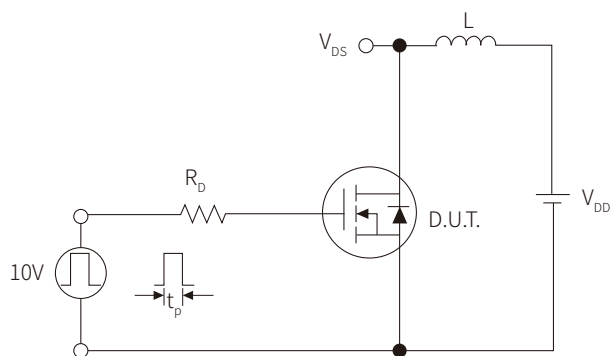
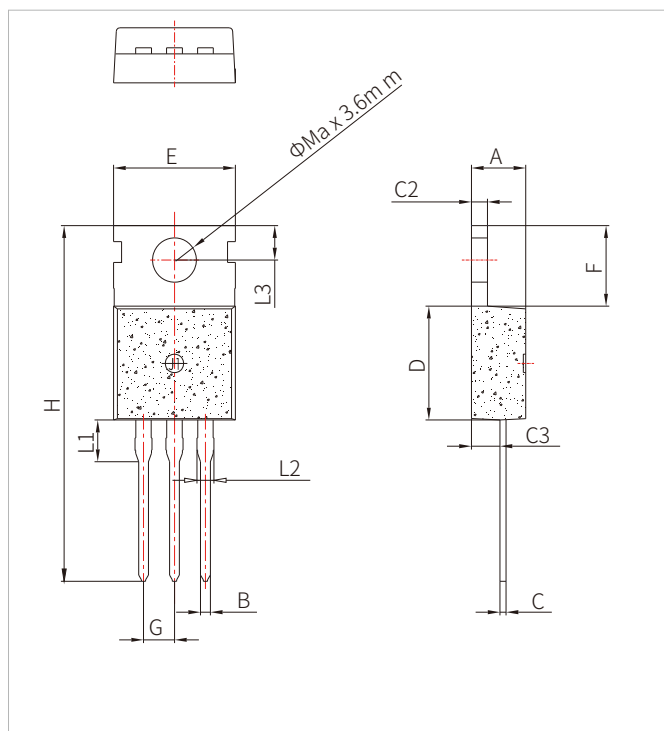
Fig.9 Transient Thermal Response Curve

Fig.10 Resistive Switching Test Circuit & Waveforms


Fig.11 Gate Charge Test Circuit & Waveform

Fig.12 Unclamped Inductive Switching Test Circuit & Waveforms


TO-220C PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.30		4.70	0.169		0.185
B	0.70		0.90	0.028		0.035
C	0.45		0.60	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.20		2.60	0.087		0.102
D	8.80		10.0	0.346		0.394
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	
H	28.0		30.0	1.102		1.181
L1		3.65			0.144	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
Φ		3.6			0.142	

ORDERING INFORMATION

Part Number	Package	Marking	Qty/pcs		
			Tube	Inner Box	Carton
SNM7N80C	TO-220C	 7N80 XXXX	50	1000	5000

Headquarters

No.3387 Shendu Road
Pujiang I&E Park
Minhang Shanghai China
201000

Hotline

400-021-5756

Web

<https://www.semiware.com>

Sales Center

Tel: 86-21-3463-7458
Email: sales18@semiware.com

Customer Service

Tel: 86-21-5484-1001
Email: sales17@semiware.com

Technical Support

Tel: 86-21-3463-7654
Email: fae01@semiware.com

Complaint & Suggestions

Tel: 86-21-3463-7172
Ext: 8868
Email: cs03@semiware.com

By QR Code

Website



Wechat

To find your local partner within Semiware's global website: www.semiware.com

© 2022 Semiware Semiconductor Inc.

The content of this document has been carefully checked and understood. However, neither Semiware nor its subsidiaries assume any liability whatsoever for any errors or inaccuracies of this document and the consequences thereof. Published specifications are subject to change without notice. Product suitability for any area of application must ultimately be determined by the customer. In all cases, products must never be operated outside their published specifications. Semiware does not guarantee the availability of all published products. This disclaimer shall be governed by substantive Chinese law and resulting disputes shall be settled by the courts at the place of business of Semiware. Latest publications and a complete disclaimer can be downloaded from the Semiware website. All trademarks recognized.