

## FEATURES

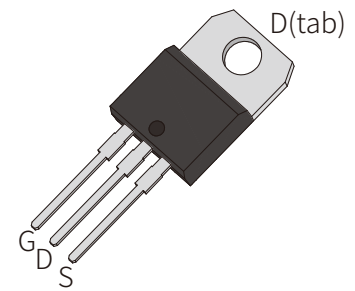
- | Super Trench
- | Advanced Trench Cell Design

## APPLICATION

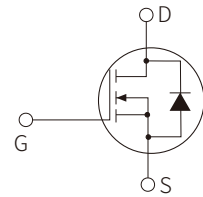
- | Power Tool Appliances
- | BMS Appliances
- | High Power Inverter System

## APPROVALS

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



TO-220B(Non-Ins)



Schematic Symbol

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Rating	Unit
Drain-source voltage	$V_{DS}$	100	V
Continuous Drain Current	$I_D$	Tc=25°C	103
		Tc=100°C	80
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	200	A
Gate-Source Voltage	$V_{GS}$	±20	V
Power Dissipation	$P_D$	Tc=25°C	223
		Tc=100°C	89
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 150	°C
Junction - to - Case	$R_{\theta JC}$	0.56	°C/W
Junction - to - Ambient	$R_{\theta JA}$	60	

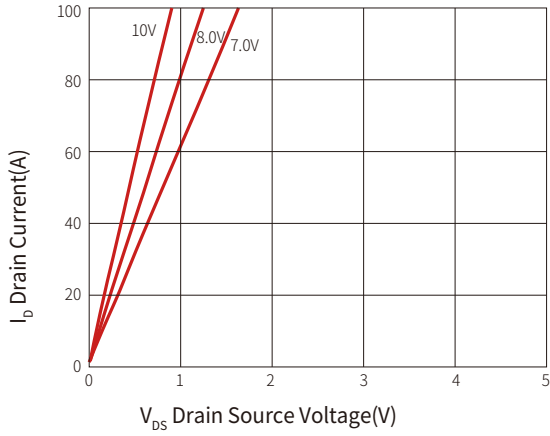
1) Pulse width limited by maximum junction temperature

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C)

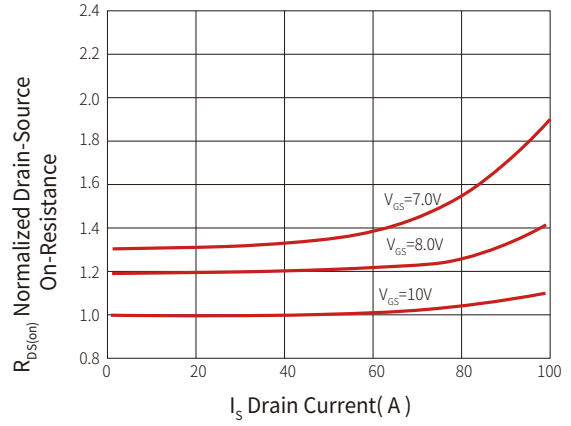
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> =0V, I <sub>DS</sub> =250μA	100			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>DS</sub> =250μA	2.4	3	3.6	V
Drain Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V			1	μA
Gate Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V			±100	nA
On-State Resistance <sup>(3)</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =30A		6.5	8	mΩ
<b>Dynamic Characteristics</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =0 to 10V V <sub>DS</sub> =50V, I <sub>D</sub> =20A		29		nC
Gate Source Charge	Q <sub>gs</sub>			6.8		nC
Gate Drain ("Miller") Charge	Q <sub>gd</sub>			8.4		nC
Input capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =50V, f=1MHz		1757		pF
Output capacitance	C <sub>oss</sub>			985		pF
Reverse transfer capacitance	C <sub>rss</sub>			12		pF
<b>Switching Characteristics</b>						
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DD</sub> =50V, V <sub>GS</sub> =10V R <sub>GEN</sub> =6Ω, I <sub>D</sub> =20A		8.4		nS
Turn-on Rise Time	t <sub>r</sub>			9.4		nS
Turn-Off Delay Time	t <sub>d(off)</sub>			27		nS
Turn-Off Fall Time	t <sub>f</sub>			18		nS
<b>Drain-Source Diode Characteristics and Max Ratings</b>						
Drain to Source Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =30A, V <sub>GS</sub> =0V			1.2	V
Maximum Continuous Drain to Source Diode Forward Current	I <sub>S</sub>				100	A
Maximum Pulsed Drain to Source Diode Forward Current	I <sub>SM</sub>				400	A
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =15A, di/dt=100A/μs		45		ns
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>				53	

# PARAMETER CHARACTERISTIC CURVE

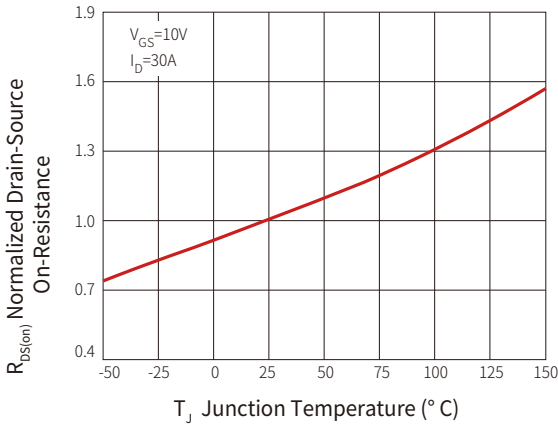
**Fig 1: On-Region Characteristics**



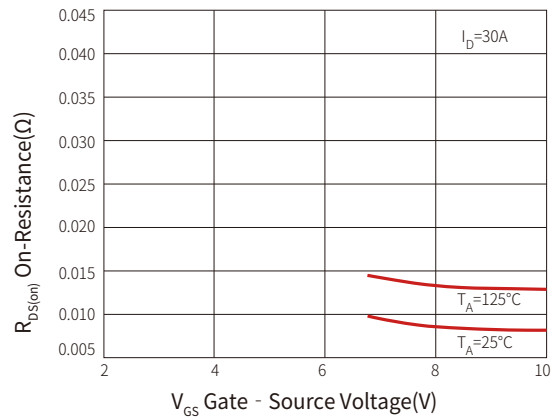
**Figure 2: On-Resistance Variation with Drain Current and Gate Voltage**



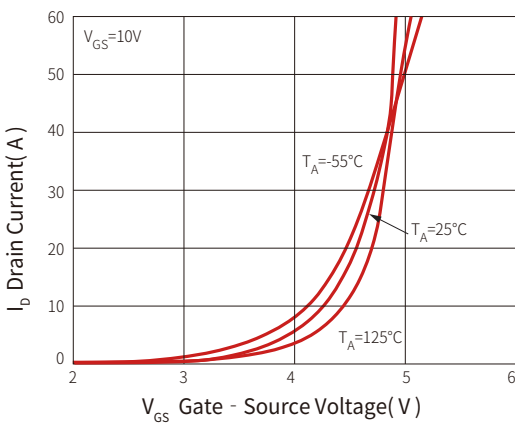
**Figure 3: On-Resistance Variation with Temperature**



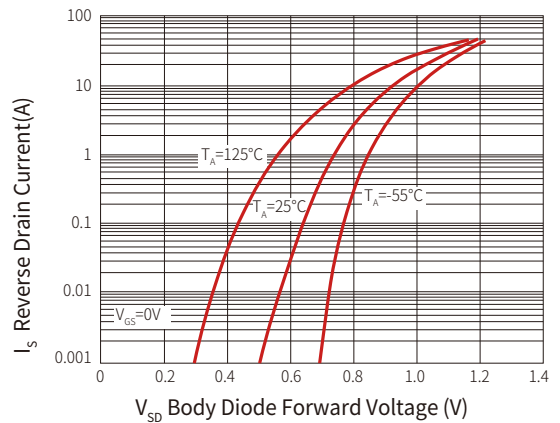
**Figure 4: On-Resistance Variation with Gate-Source Voltage**



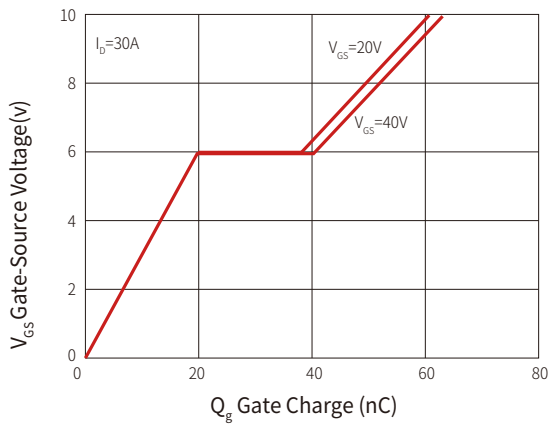
**Figure 5: Transfer Characteristics**



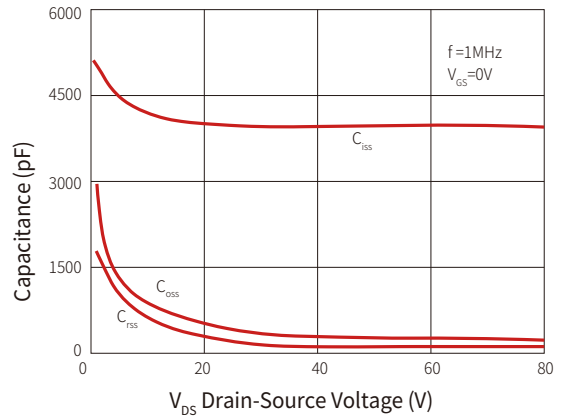
**Figure 6: Body Diode Forward Voltage Variation with Source Current and Temperature**



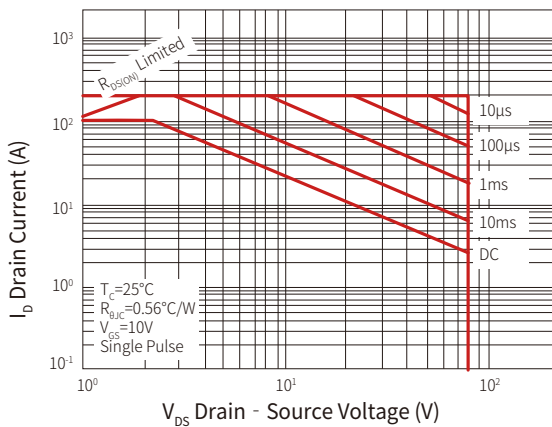
**Figure 7: Gate Charge Characteristics**



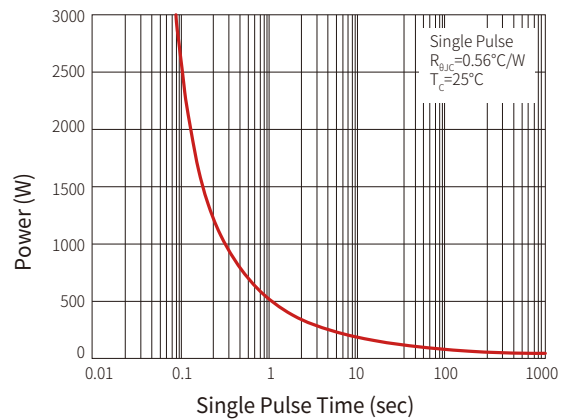
**Figure 8: Capacitance Characteristics**



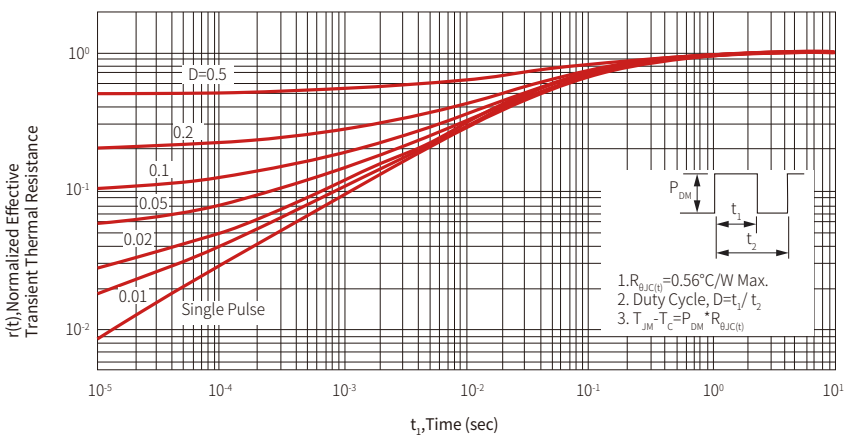
**Figure 9: Maximum Safe Operating Area**



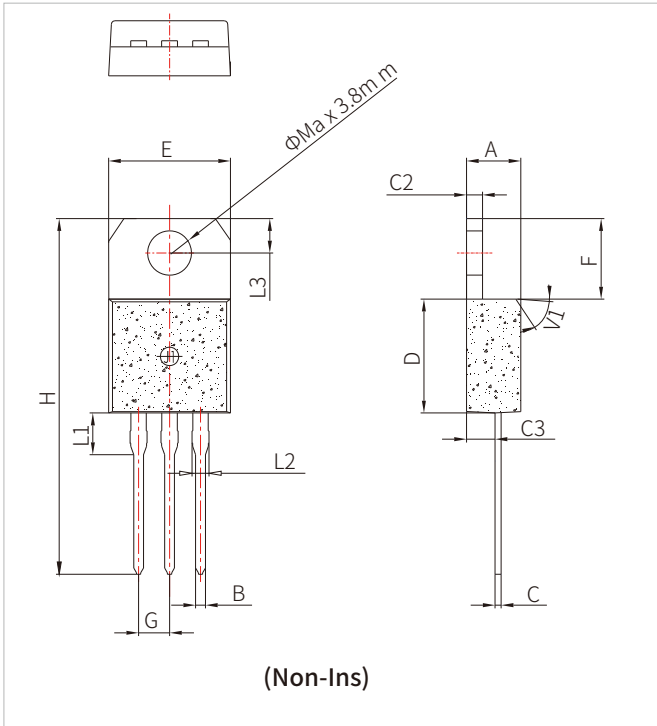
**Figure 10: Single Pulse Maximum Power Dissipation**



**Figure 11: Transient Thermal Response Curve**



## TO-220B PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.30		4.70	0.169		0.185
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.60		10.4	0.378		0.409
F	6.20		6.60	0.244		0.260
G		2.54			0.1	
H	28.0		29.8	1.102		1.173
L1		3.75			0.148	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	

## ORDERING INFORMATION

Part Number	Component Package	Marking	QTY/Tube
SNM100N10B	TO-220B	 100N10 XXXX	1000PCS

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