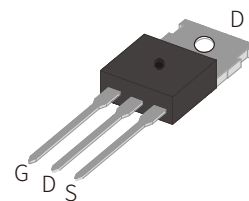


FEATURES

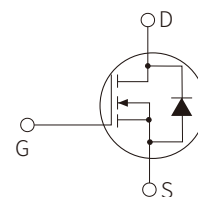
- Low on-resistance and low conduction losses
- Ultra Low Gate Charge cause lower driving requirements
- 100% Avalanche Tested



TO-220

APPLICATION

- DC/DC Converter
- Motor control and drives
- Battery management



Schematic Symbol

APPROVALS

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

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	85	V
Pulse Drain Current Tested ⁽²⁾	I_{DM}	640	A
Continuous Drain current $T_c=25^\circ\text{C}$	I_D	160	A
Gate-Source Voltage	V_{GSS}	± 20	V
Maximum Power Dissipation ($T_c=25^\circ\text{C}$)	P_D	230	W
Single Pulse Avalanche Energy ⁽¹⁾	E_{AS}	829	mJ
Diode Continuous Forward Current ($T_c=25^\circ\text{C}$)	I_S	160	A
Junction Temperature	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$
Thermal Resistance- Junction to Case ⁽³⁾	$R_{\theta JC}$	0.54	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	85			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	4	V
Drain Leakage Current	I _{DSS}	V _{DS} =85V, V _{GS} =0V			1	μA
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
On-State Resistance ⁽⁴⁾	R _{DS(on)}	V _{GS} =10V, I _D =50A		2.4	2.8	mΩ
Dynamic Characteristics						
Total Gate Charge	Q _g	V _{GS} =10V V _{DS} =40V, I _D =80A		120		nC
Gate Source Charge	Q _{gs}			48		nC
Gate Drain("Miller") Charge	Q _{gd}			35		nC
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =40V, f=1MHz		7900		pF
Output capacitance	C _{oss}			1450		pF
Reverse transfer capacitance	C _{rss}			335		pF
Gate Resistance	R _g	F=1MHz		1.6		Ω
Switching Characteristics ⁽⁵⁾						
Turn-on Delay Time	t _{d(on)}	V _{DD} =40V, V _{GS} =10V R _L = 3Ω		37		nS
Turn-on Rise Time	t _r			45		nS
Turn-Off Delay Time	t _{d(off)}			85		nS
Turn-Off Fall Time	t _f			49		nS
Drain-Source Diode Characteristics and Max Ratings						
Drain to Source Diode Forward Voltage	V _{SD}	I _s =80A, V _{GS} =0V			1.2	V
Reverse Recovery Time	t _{rr}	I _F =30A di/dt=100A/μs		100		ns
Reverse Recovery Charge	Q _{rr}			323		nC

Note:

- Limited by TJmax, starting T_J=25° C, R_θ=25Ω, V_D=42.5V, V_{GS}=10V. Part not recommended for use above this value.
- Repetitive Rating: Pulse width limited by maximum junction temperature.
- Surface Mounted on FR4 Board, t ≤ 10 sec
- Pulse Test: pulse width ≤ 300 us, duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing

PARAMETER CHARACTERISTIC CURVE

Fig 1: Power De-rating

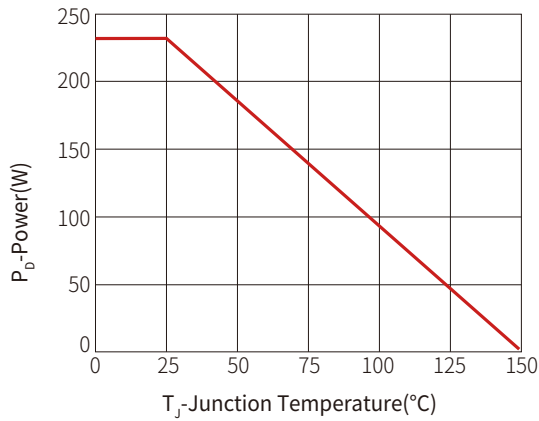


Figure 2: I_D-Drain Current (A)

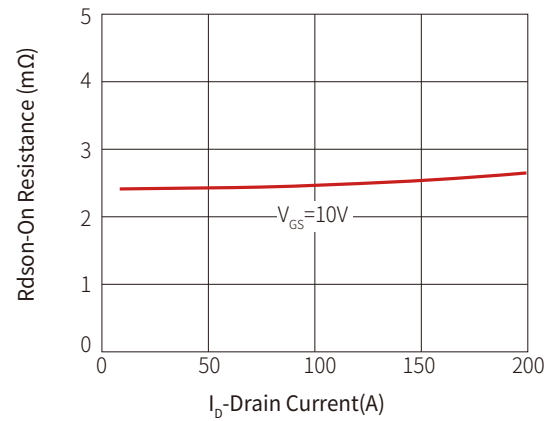


Figure 3: R_{DS(on)}-Junction Temperature

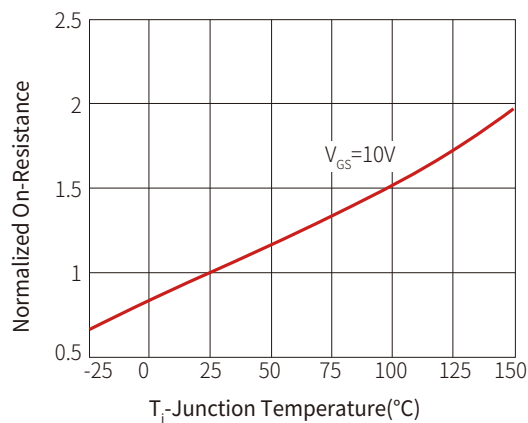


Figure 4: Output Characteristics

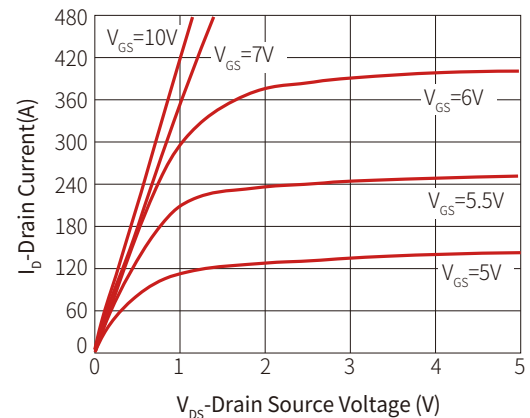


Figure 5: Capacitance -V_{DS}

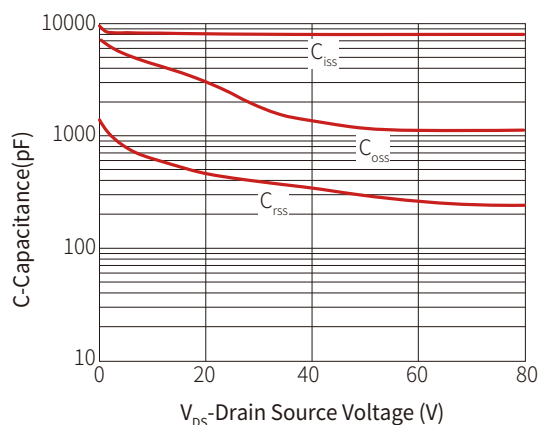


Figure 6: Gate Charge

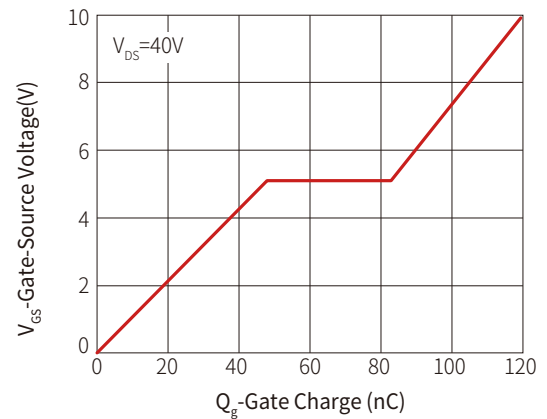




Fig 7: Source-Drain Diode Forward Voltage

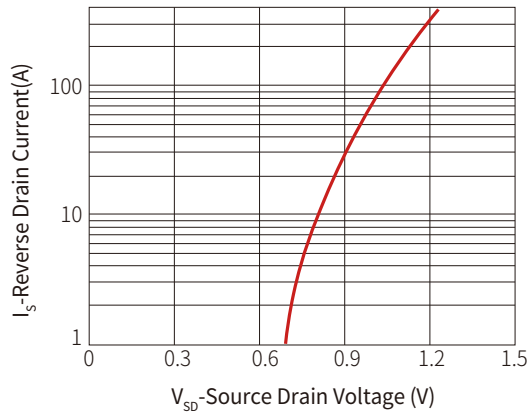


Figure 8: Transfer Characteristics

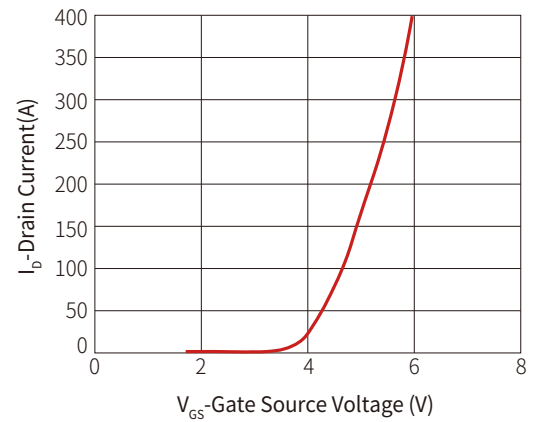


Figure 9: Safe Operation Area

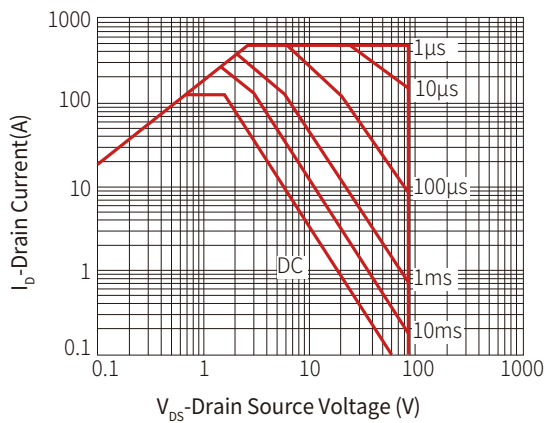
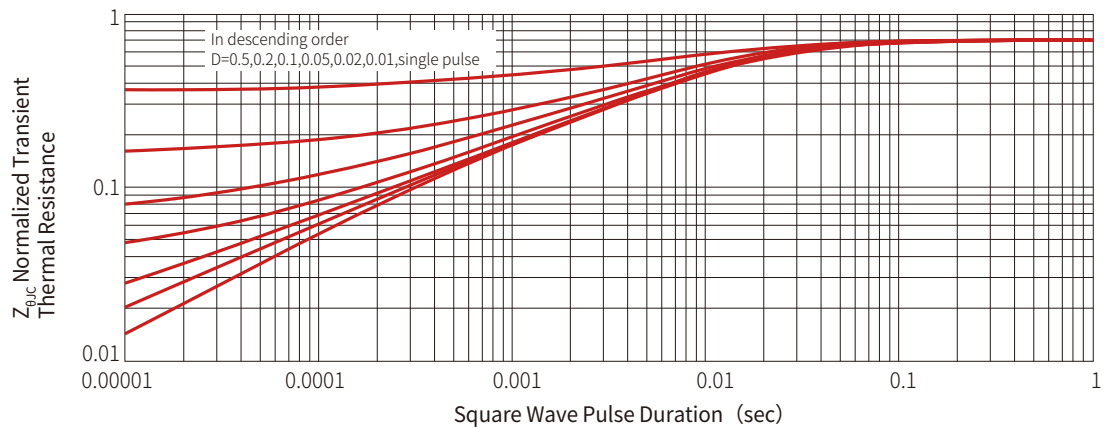
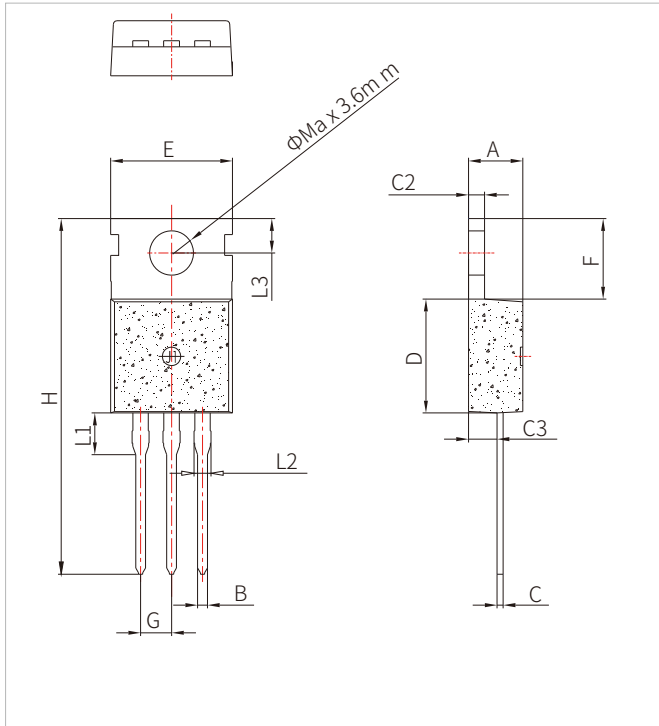


Figure 10: Normalized Maximum Transient Thermal Impedance



TO-220 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
SNM160N85C	TO-220	 220N08 XXXX	50	1000	5000

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