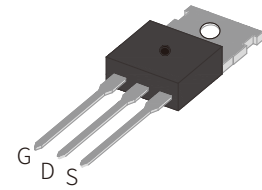


FEATURES

| Advanced trench cell design



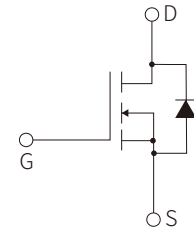
TO-220C

APPLICATION

| LCD TV appliances

| LCDM appliances

| High power inverter system



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 Voltage $T_c=25^\circ\text{C}$	V_{DS}	100	V
Drain Current (Pulsed) $T_c=25^\circ\text{C}$ $V_{GS}=10\text{V}$	I_{DM}^{***}	1000	A
Drain Current (DC)	I_D	$T_c=25^\circ\text{C}$ $V_{GS}=10\text{V}$	180
		$T_c=100^\circ\text{C}$ $V_{GS}=10\text{V}$	126
Gate-Source Voltage $T_c=25^\circ\text{C}$	V_{GS}	± 20	V
Drain power dissipation $T_c=25^\circ\text{C}$	P_{tot}	365	W
Continuous-Source Current $T_c=25^\circ\text{C}$	I_S	180	A
Junction Temperature	T_J	175	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 to 175	$^\circ\text{C}$
Single Pulsed Avalanche Energy $V_{DD}=50\text{V}$, $L=0.5\text{mH}$, $I_{AS}=56\text{A}$	E_{AS}	784	mJ
Thermal Resistance – Junction to Ambient	$R_{\theta JA}$	62	$^\circ\text{C}/\text{W}$
Thermal Resistance- Junction to Case	$R_{\theta JC}$	0.5	$^\circ\text{C}/\text{W}$

Notes:

* Surface Mounted on 1 in² pad area, $t \leq 10$ sec

** Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$

*** Limited by bonding wire

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _{DS} =250μA	100			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _{DS} =250μA	2		4	V
Drain Leakage Current	I _{DSS}	V _{DS} =80V, V _{GS} =0V			1	μA
Gate Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
On-State Resistance	R _{DS(on)} ^a	V _{GS} =10V, I _{DS} =50A			2.8	mΩ
Diode Characteristics						
Diode Forward Voltage	V _{SD} ^a	I _{SD} =50A, V _{GS} =0V			1.3	V
Reverse Recovery Time	t _{rr}	I _{SD} =50A, V _{GS} =0V dI _{SD} /dt=100A/μs		97		nS
Reverse Recovery Charge	Q _{rr}			138		nC
Dynamic Characteristics^b						
Input capacitance	C _{iss}	V _{GS} =0V, V _{DS} =50V, Frequency = 1 MHz		9200		pF
Output capacitance	C _{oss}			1130		pF
Reverse transfer capacitance	C _{rss}			110		pF
Turn-on Delay Time	t _{d(on)}	V _{DS} =50V, V _{GEN} =10V R _G =3.9Ω, R _L =1Ω, I _{DS} =50A		32		nS
Turn-on Rise Time	t _r			40		nS
Turn-Off Delay Time	t _{d(off)}			80		nS
Turn-Off Fall Time	t _f			35		nS
Gate Charge Characteristics^b						
Total Gate Charge	Q _g	V _{DS} =50V, V _{GS} =10V, I _{DS} =50A		131		nC
Gate-Source Charge	Q _{gs}			50		nC
Gate-Drain Charge	Q _{gd}			24		nC

Notes:

a : Pulse test ; pulse width ≤ 300us, duty cycle ≤ 2 %

b : Guaranteed by design, not subject to production testing

PARAMETER CHARACTERISTIC CURVE

Figure1: Power Capability

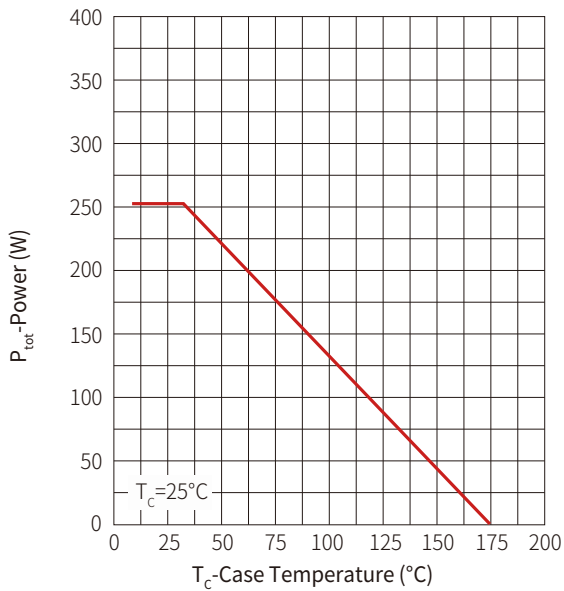


Figure2: Current Capability

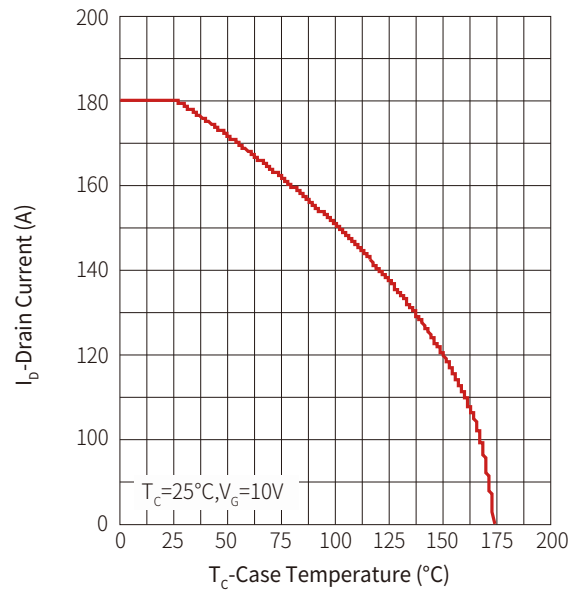


Figure3: Safe operating Area

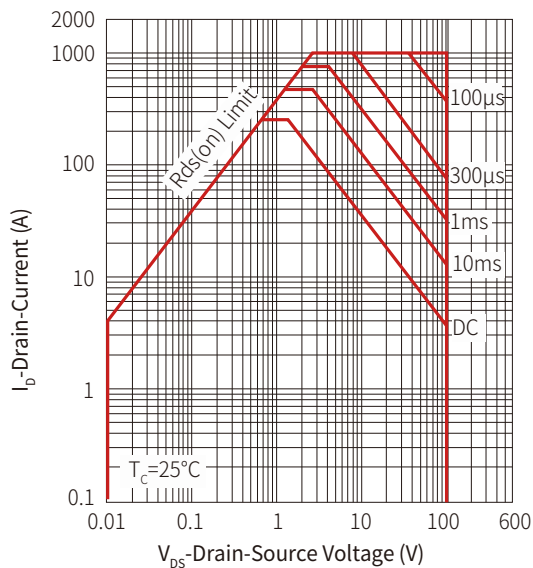


Figure 4: Transient Thermal Impedance

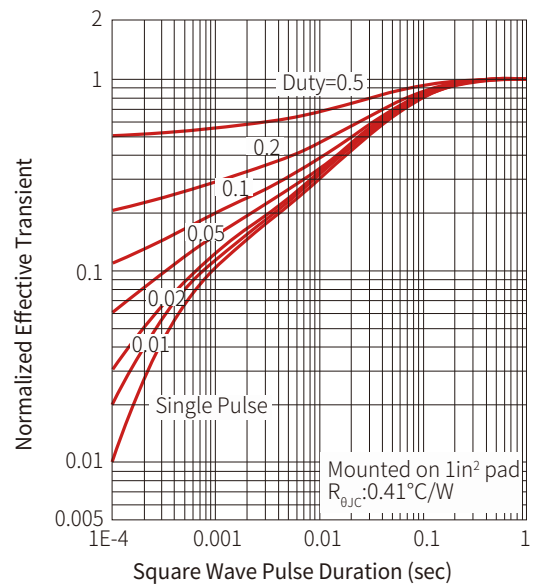


Figure 5: Output Characteristics

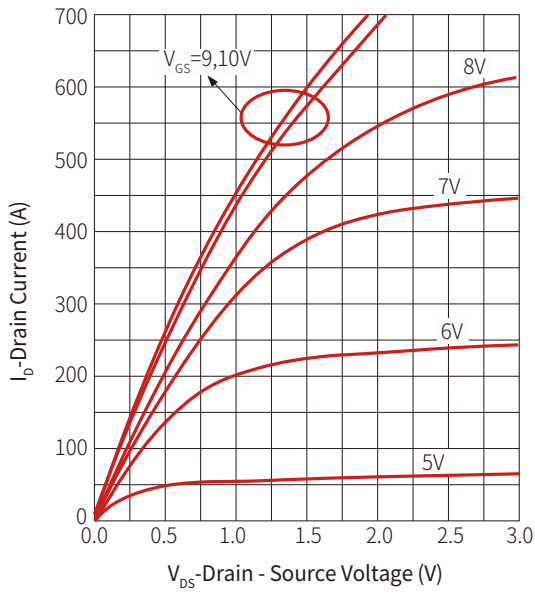


Figure 6: Drain-Source On Resistance

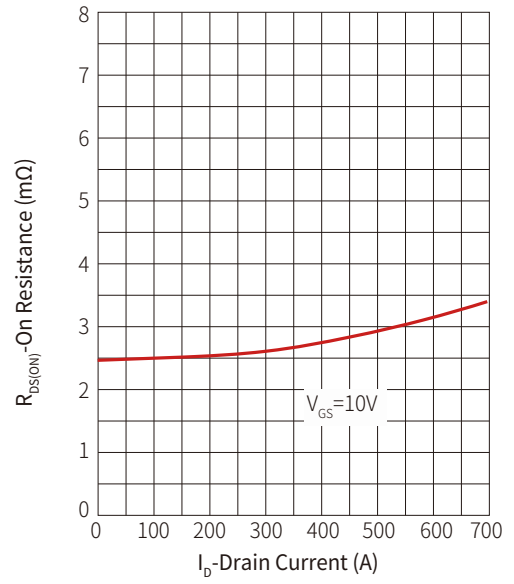


Figure 7: Transfer Characteristics

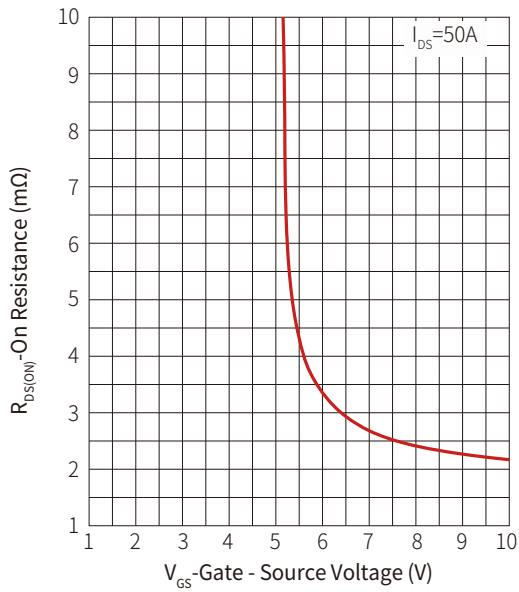


Figure 8: Gate Threshold Voltage

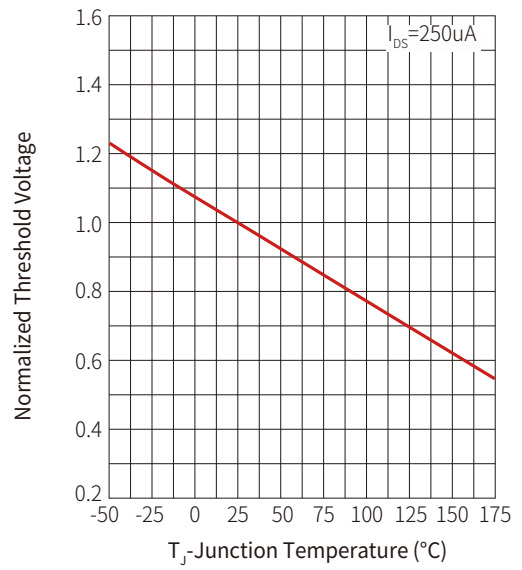


Figure 9: Drain-Source On Resistance

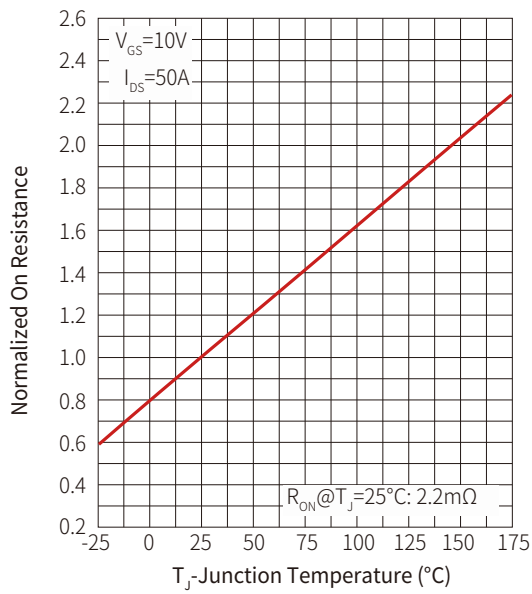


Figure 10: Body Diode Characteristics

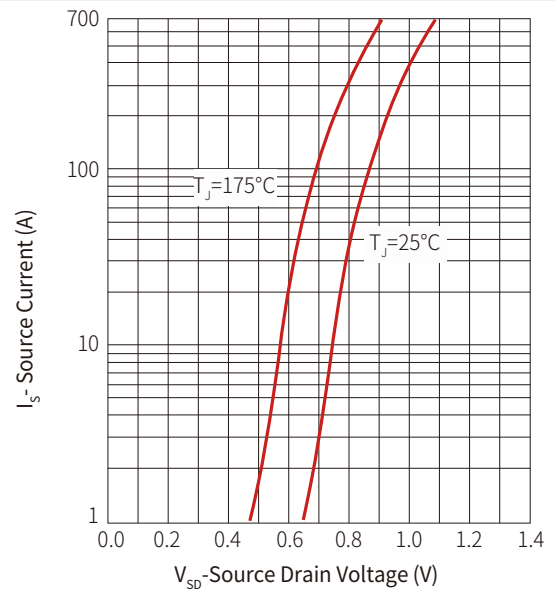


Figure 11: Capacitance

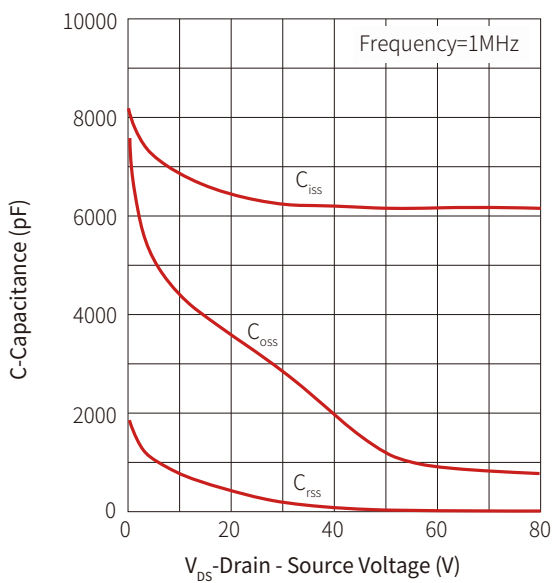
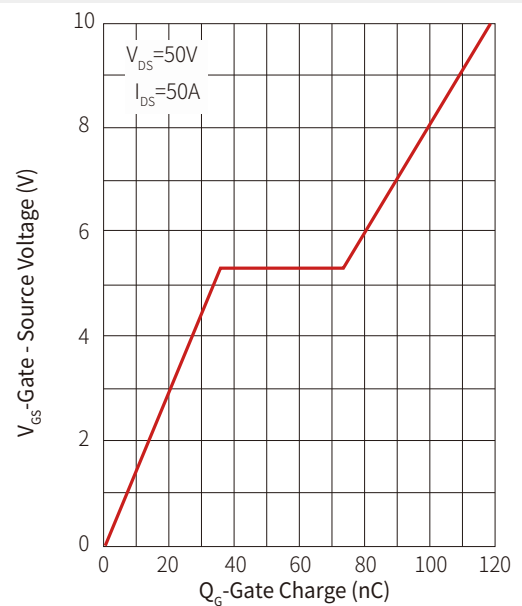
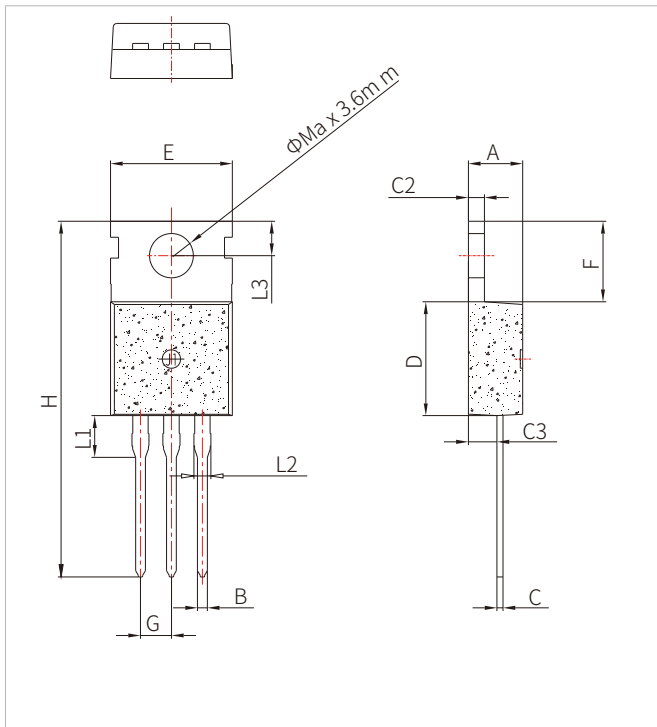


Figure 12: Gate Charge




TO-220C PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
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	8.90		9.90	0.350		0.390
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		29.8	1.102		1.173
L1		3.39			0.133	
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
SNM180N10C	TO-220C	 180N10 XXXX	50	1000	5000

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