

FEATURES

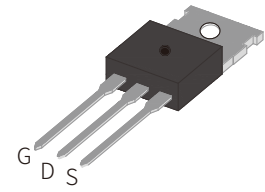
| Advanced trench cell design

APPLICATION

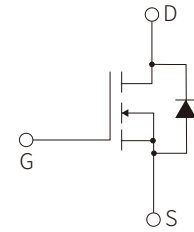
| LCD TV appliances

| LCDM appliances

| High power inverter system



TO-220C



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	A
		$T_c=100^\circ\text{C}$ $V_{GS}=10\text{V}$ 126	A
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	$^\circ\text{C/W}$
Thermal Resistance- Junction to Case	$R_{\theta JC}$	0.5	$^\circ\text{C/W}$

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}	$V_{GS}=0V, I_{DS}=250\mu A$	100			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	2		4	V
Drain Leakage Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V$			1	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
On-State Resistance	$R_{DS(on)}^a$	$V_{GS}=10V, I_{DS}=50A$			2.8	m Ω
Diode Characteristics						
Diode Forward Voltage	V_{SD}^a	$I_{SD}=50A, V_{GS}=0V$			1.3	V
Reverse Recovery Time	t_{rr}	$I_{DS}=50A, V_{GS}=0V$ $dI_{SD}/dt=100A/\mu s$		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	$t_{d(on)}$	$V_{DS}=50V, V_{GEN}=10V$ $R_G=3.9\Omega, R_L=1\Omega,$ $I_{DS}=50A$		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 ≤ 300μs, duty cycle ≤ 2 %

b : Guaranteed by design, not subject to production testing

PARAMETER CHARACTERISTIC CURVE

Figure1: Power Capability

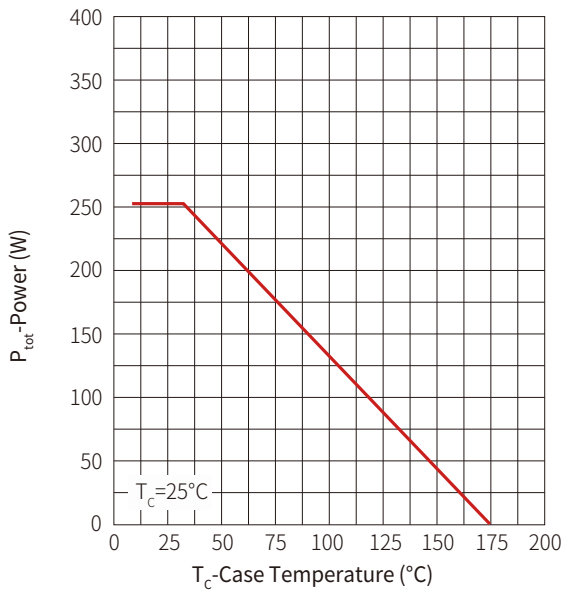


Figure2: Current Capability

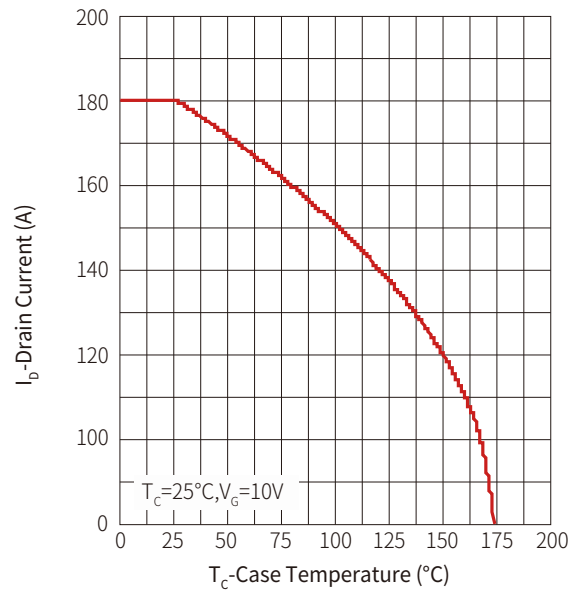


Figure3: Safe operating Area

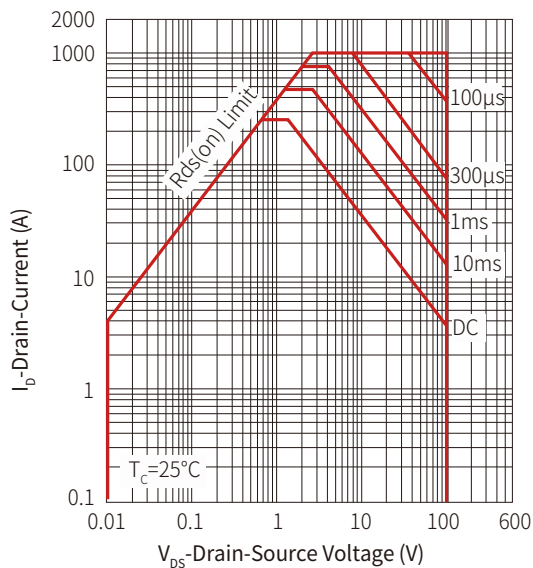


Figure 4: Transient Thermal Impedance

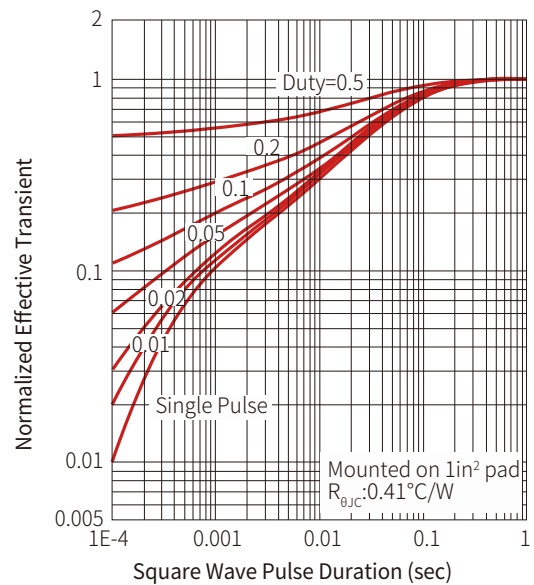


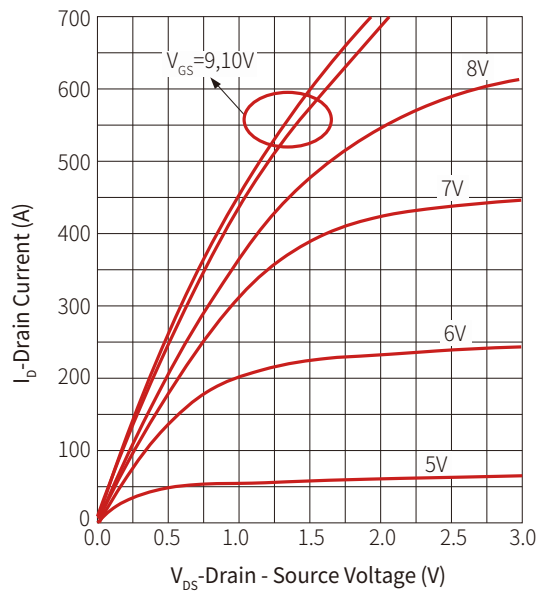
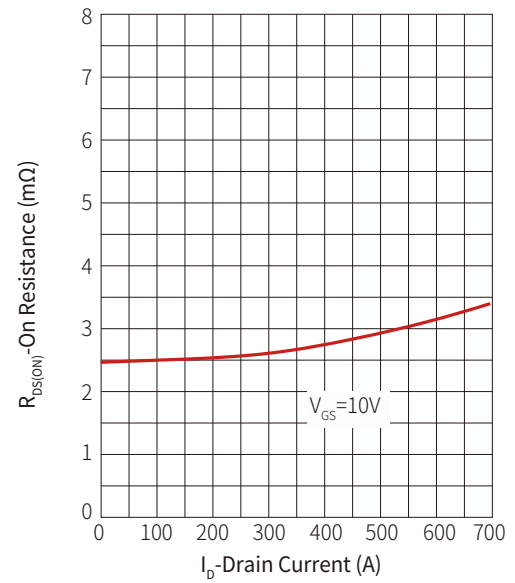
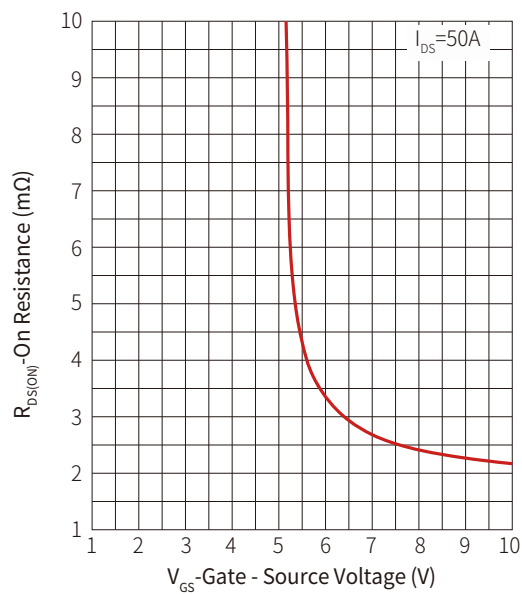
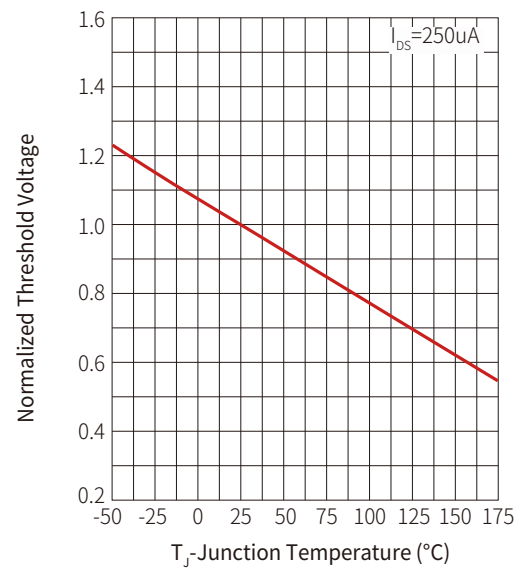
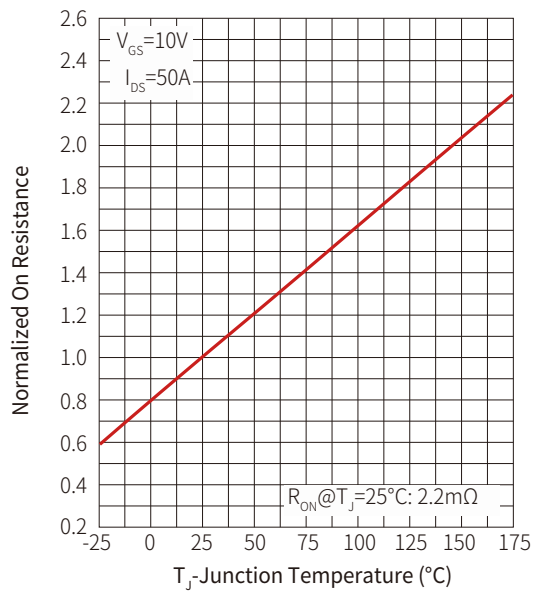
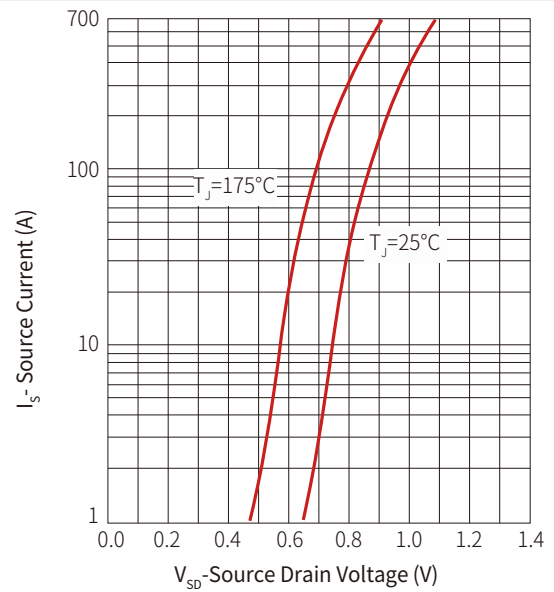
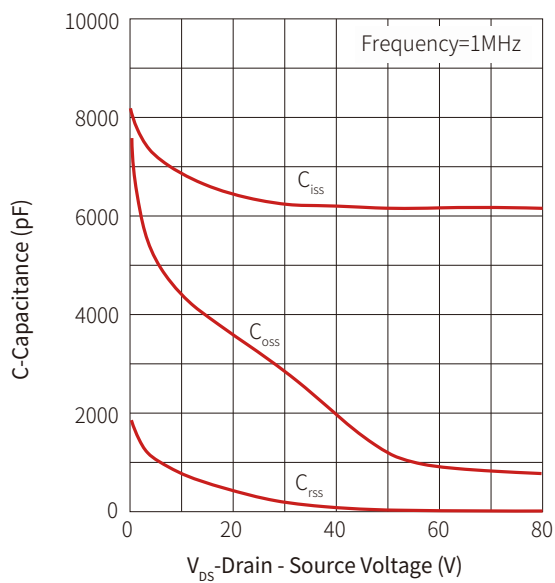
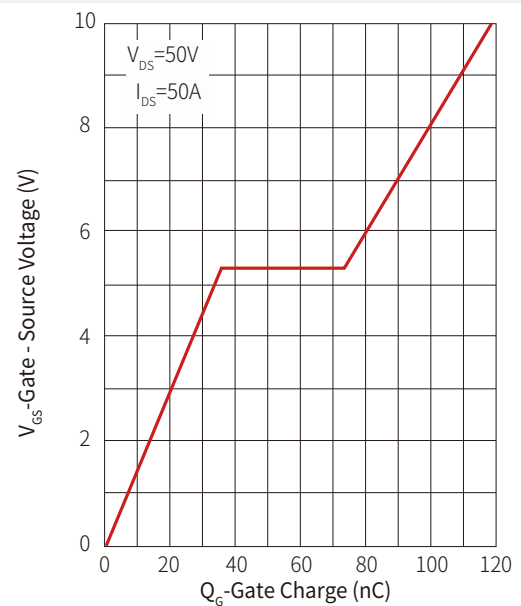
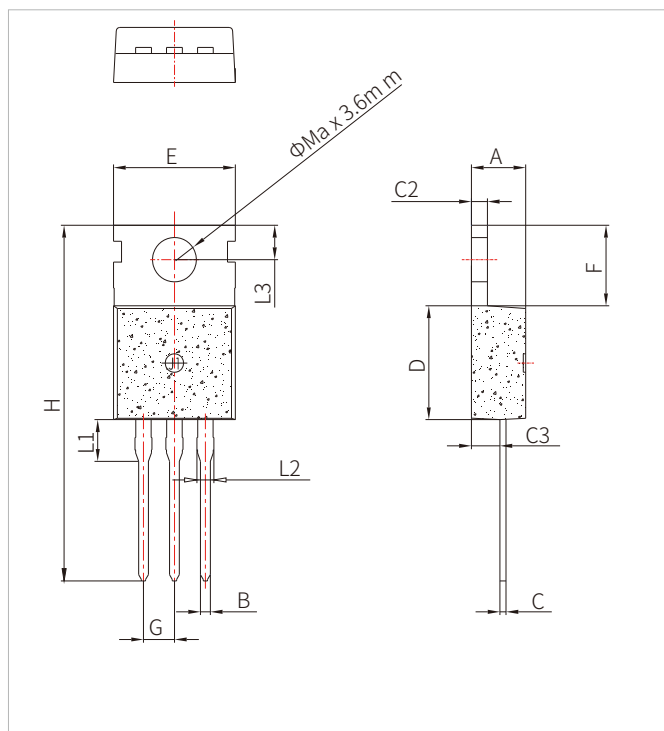
Figure 5: Output Characteristics

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	4.30		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
SNM180N10C	TO-220C	 180N10 XXXX	50	1000	5000

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By QR Code

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