

FEATURES

- Low gate charge
- Advanced trench cell design

APPLICATION

- LCD TV appliances
- LCDM appliances
- High power inverter system

APPROVALS

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

ABSOLUTE MAXIMUM RATINGS

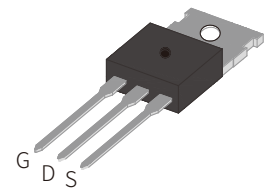
Parameter	Symbol	Value	Unit
Drain-Source Voltage $T_c=25^\circ\text{C}$	V_{DS}	-40	V
Gate-Source Voltage $T_c=25^\circ\text{C}$	V_{GS}	± 20	V
Drain Current (DC) , $V_{GS}=-10\text{ V}$	$I_D^{*,***}$	$T_c=25^\circ\text{C}$ -180	A
		$T_c=100^\circ\text{C}$ -166	A
Drain Current (Pulsed) * $T_c=25^\circ\text{C}$, $V_{GS}=-10\text{ V}$	I_{DM}^*	-700	A
Continuous-Source Current $T_c=25^\circ\text{C}$	I_S	-180	A
Drain power dissipation $T_c=25^\circ\text{C}$	P_{tot}	300	W
Single Pulsed Avalanche Current $V_{DD}=-40\text{V}$, $L=0.1\text{mH}$	I_{AS}	-110	A
Single Pulsed Avalanche Energy $V_{DD}=-40\text{V}$, $L=1.0\text{mH}$	E_{AS}	612	mJ
Thermal Resistance- Junction to Ambient	$R_{\theta JA}^{**}$	42	$^\circ\text{C/W}$
Thermal Resistance- Junction to Case	$R_{\theta JC}^{**}$	0.5	$^\circ\text{C/W}$
Junction Temperature	T_J	175	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 to 175	$^\circ\text{C}$

Notes:

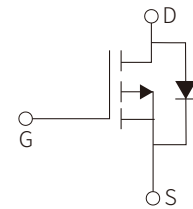
* Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$

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

*** Limited by bonding wire



TO-220C



Schematic Symbol

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-40			V
Drain Leakage Current	I_{DSS}	$V_{DS}=-32V, V_{GS}=0V$			-1	μA
Gate Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1		-2.5	V
On-State Resistance	$R_{DS(on)}^a$	$V_{GS}=-10V, I_{DS}=-50A$			3.0	m Ω
		$V_{GS}=-4.5V, I_{DS}=-30A$			5.0	m Ω
Gate Charge Characteristics ^b						
Total Gate Charge	Q_g	$V_{DS}=-20V, V_{GS}=-10V, I_{DS}=-20A$		276		nC
Gate- Source Charge	Q_{gs}			65		nC
Gate- Drain Charge	Q_{gd}			35		nC
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	$V_{DS} = - 20 V, V_{GEN} = - 10 V,$ $R_G = 3.9 \Omega, R_L = 0.4 \Omega,$ $I_{DS} = - 50 A$		18		nS
Turn-On Rise Time	t_r			124		nS
Turn-Off Delay Time	$t_{d(off)}$			337		nS
Turn-Off Fall Time	t_f			140		nS
Input Capacitance	C_{iss}	$V_{DS}=-20V, V_{GS}=0V$ Frequency = 1 MHz		16177		pF
Output Capacitance	C_{oss}			1067		pF
Reverse Transfer Capacitance	C_{rss}			301		pF
Diode Characteristics						
Diode Forward Voltage	V_{SD}^a	$I_{SD} = -50A, V_{GS}=0V$			-1.3	V
Reverse Recovery Time	t_{rr}	$I_{DS} = -50 A, V_{GS}=0V$ $di_{SD} / dt=100A/\mu s$		28		nS
Reverse Recovery Charge	Q_{rr}			26		nC

Notes:

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

b: Guaranteed by design, not subject to production testing

PARAMETER CHARACTERISTIC CURVE

Figure1: Power Capability

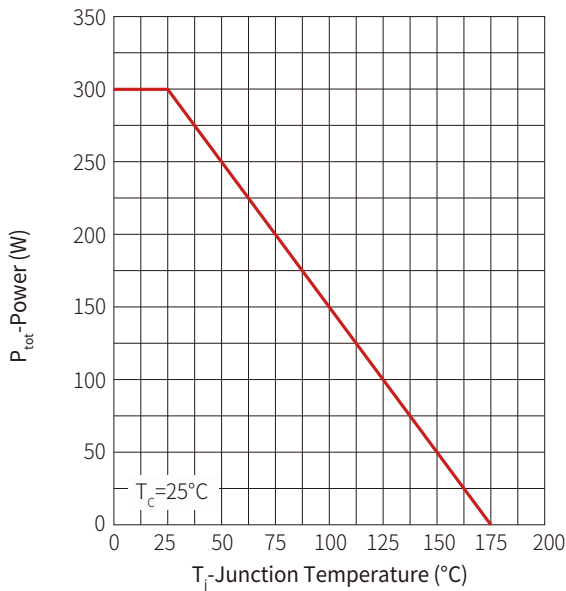


Figure2: Current Capability

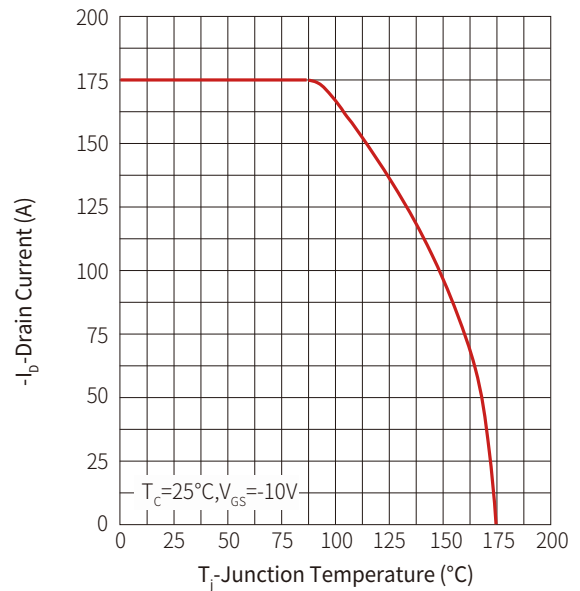


Figure3: Safe Operation Area

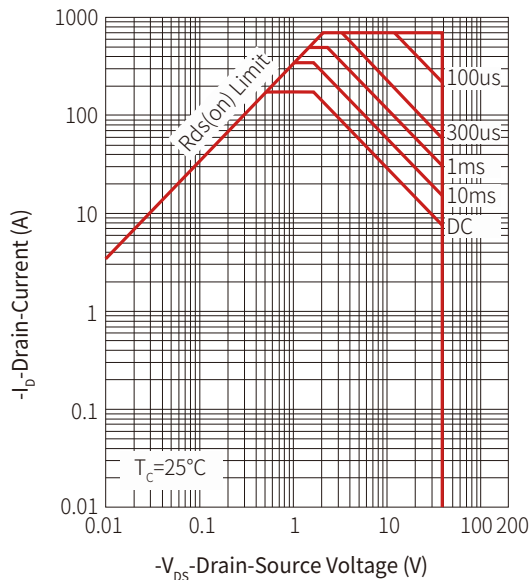


Figure 4: Transient Thermal Impedance

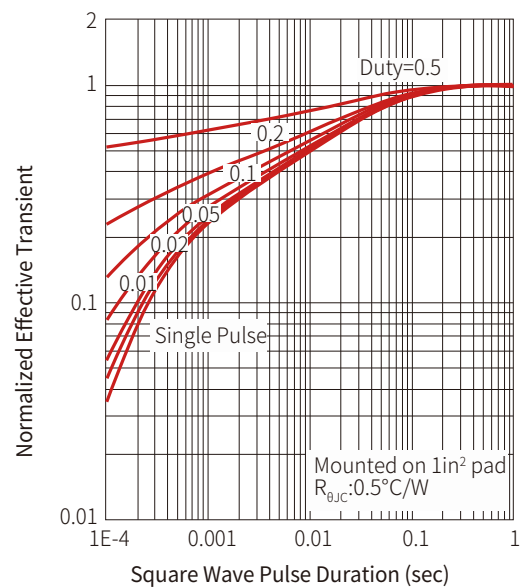


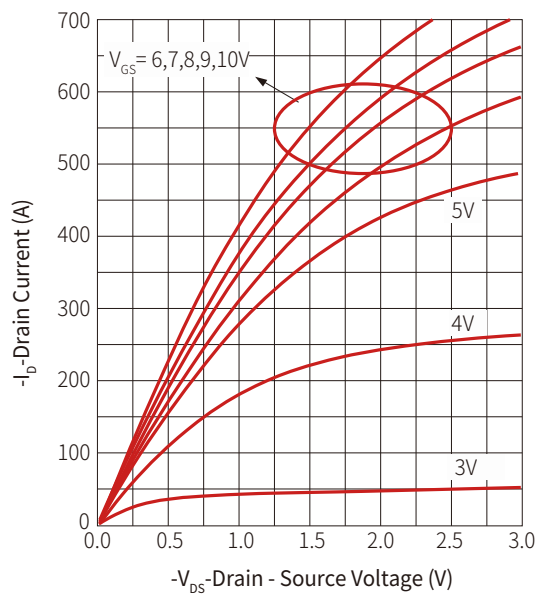
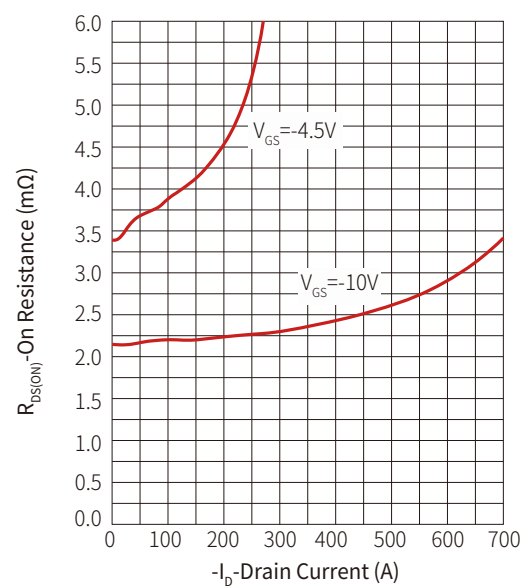
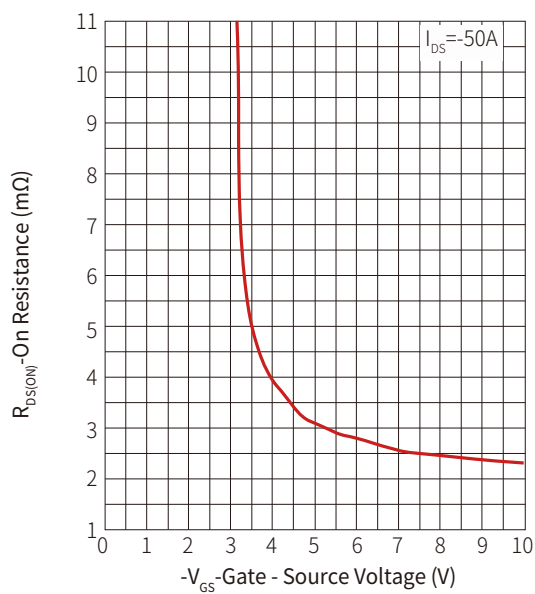
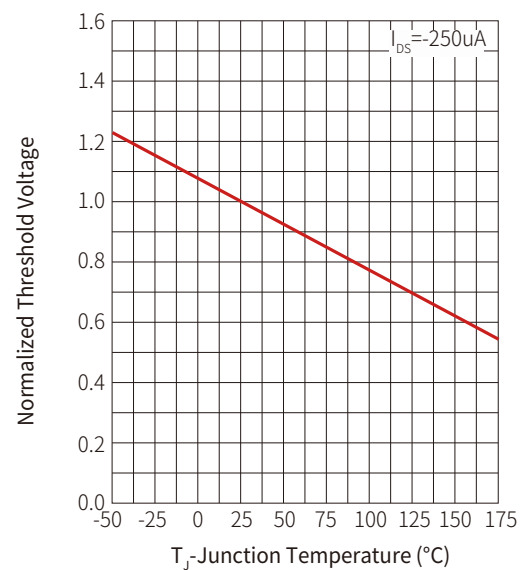
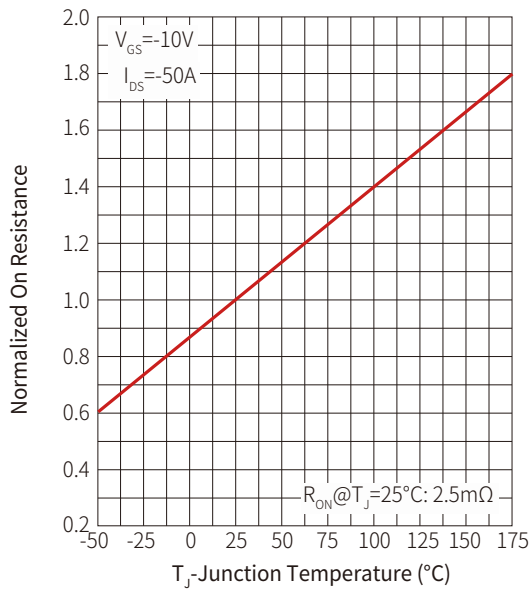
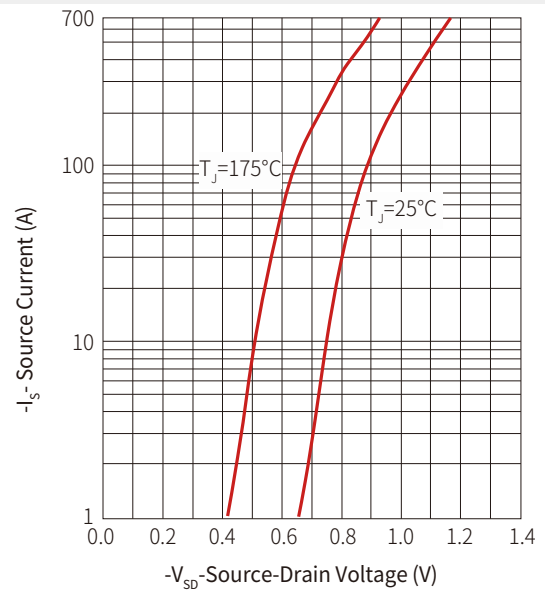
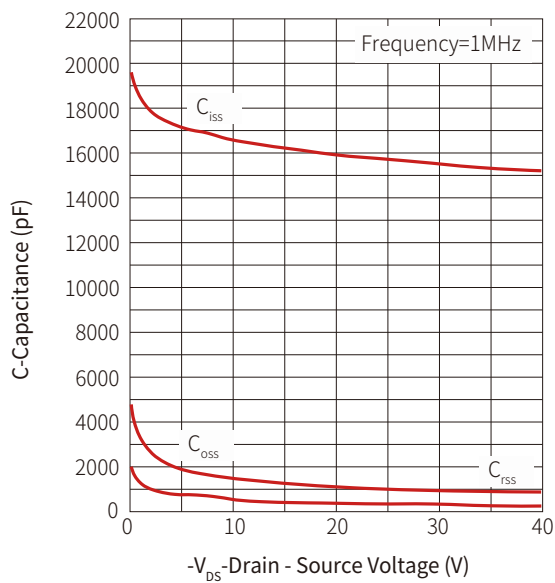
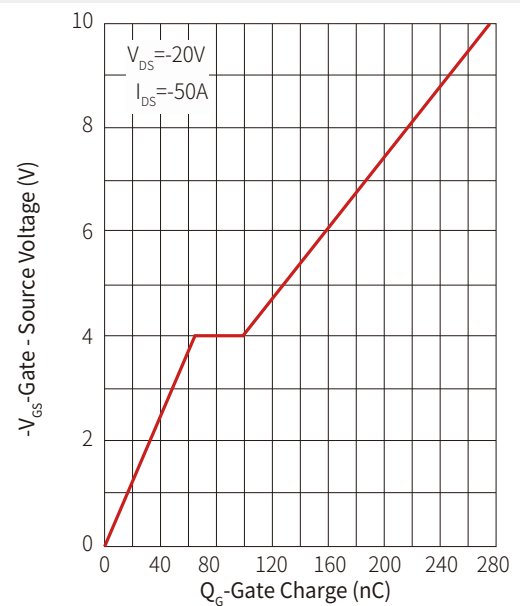
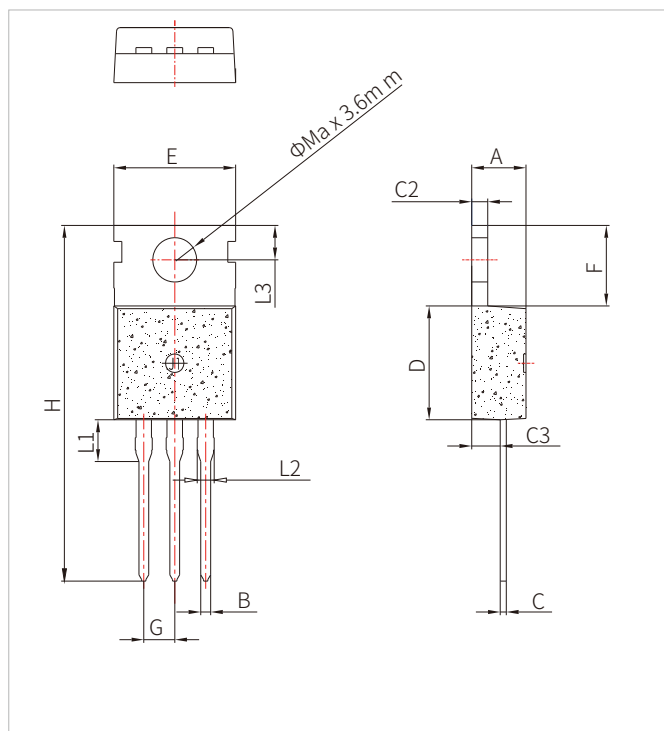
Figure5 :Output Characteristics

Figure6 :On Resistance

Figure7 :Transfer Characteristics

Figure8 : Normalized Threshold Voltage


Figure9 :Normalized On Resistance

Figure10 : Diode Forward Current

Figure11 :Capacitance

Figure12 : 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	Marking	Package	Qty/pcs		
			Tube	Inner Box	Carton
SPMC200P04	 SPMC200P04 XXXX	TO-220C	50	1000	5000

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