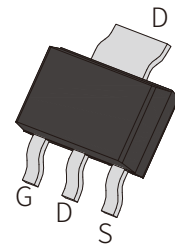


## FEATURES

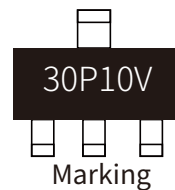
- | Surface-mounted package
- | Advanced trench cell design

## APPLICATION

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



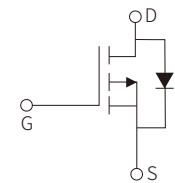
SOT-223



Marking

## APPROVALS

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



Schematic Symbol

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit	
Drain-Source Voltage $T_c=25^\circ\text{C}$	$V_{DS}$	-100	V	
Drain Current ( Pulsed ) $T_c=25^\circ\text{C}$ $V_{GS}=-10\text{V}$	$I_{DM}^{**}$	-76	A	
Drain Current ( DC )	$I_D^*$	$T_c=25^\circ\text{C}$ $V_{GS}=-10\text{V}$	-30	A
		$T_c=100^\circ\text{C}$ $V_{GS}=-10\text{V}$	-18	A
Gate-Source Voltage $T_c=25^\circ\text{C}$	$V_{GS}$	$\pm 20$	V	
Drain power dissipation $T_c=25^\circ\text{C}$	$P_{tot}$	50	W	
Continuous-Source Current $T_c=25^\circ\text{C}$	$I_S$	-30	A	
Junction Temperature	$T_J$	-55 to 150	$^\circ\text{C}$	
Storage Temperature	$T_{STG}$	-55 to 150	$^\circ\text{C}$	
Single Pulsed Avalanche Energy $V_{DD}=-50\text{V}$ , $L=1.0\text{mH}$	$E_{AS}^*$	242	mJ	
Thermal Resistance -Junction to Ambient	$R_{\theta JA}^*$	37	$^\circ\text{C}/\text{W}$	
Thermal Resistance- Junction to Case	$R_{\theta JC}^*$	1.2	$^\circ\text{C}/\text{W}$	

Notes:

- \* Surface Mounted on 1 in<sup>2</sup> pad area,  $t \leq 10$  sec
- \*\* Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$

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

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source Breakdown Voltage	BV <sub>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	-1.0	-1.5	-2.3	V
Drain Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =-80V, 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	R <sub>DS(on)</sub> <sup>a</sup>	V <sub>GS</sub> =-10V, I <sub>DS</sub> =-1A		52	58	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>DS</sub> =-1A		60	68	mΩ
<b>Diode Characteristics</b>						
Diode Forward Voltage	V <sub>SD</sub> <sup>a</sup>	I <sub>SD</sub> =-0.5A, V <sub>GS</sub> =0V		0.7	1.3	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>DS</sub> =-10A dI <sub>SD</sub> /dt=100A/μs		32		nS
Reverse Recovery Charge	Q <sub>rr</sub>			49		nC
<b>Dynamic Characteristics<sup>b</sup></b>						
Input capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =-50V, Frequency = 1 MHz		4507		pF
Output capacitance	C <sub>oss</sub>			97		pF
Reverse transfer capacitance	C <sub>rss</sub>			15		pF
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DS</sub> =-50V, V <sub>GEN</sub> =-10V R <sub>G</sub> =4.5Ω, R <sub>L</sub> =5Ω, I <sub>DS</sub> =-10A		49		nS
Turn-on Rise Time	t <sub>r</sub>			71		nS
Turn-Off Delay Time	t <sub>d(off)</sub>			555		nS
Turn-Off Fall Time	t <sub>f</sub>			187		nS
<b>Gate Charge Characteristics<sup>b</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-50V, V <sub>GS</sub> =-10V, I <sub>DS</sub> =-10A		73		nC
Gate-Source Charge	Q <sub>gs</sub>			17		nC
Gate-Drain Charge	Q <sub>gd</sub>			9.1		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

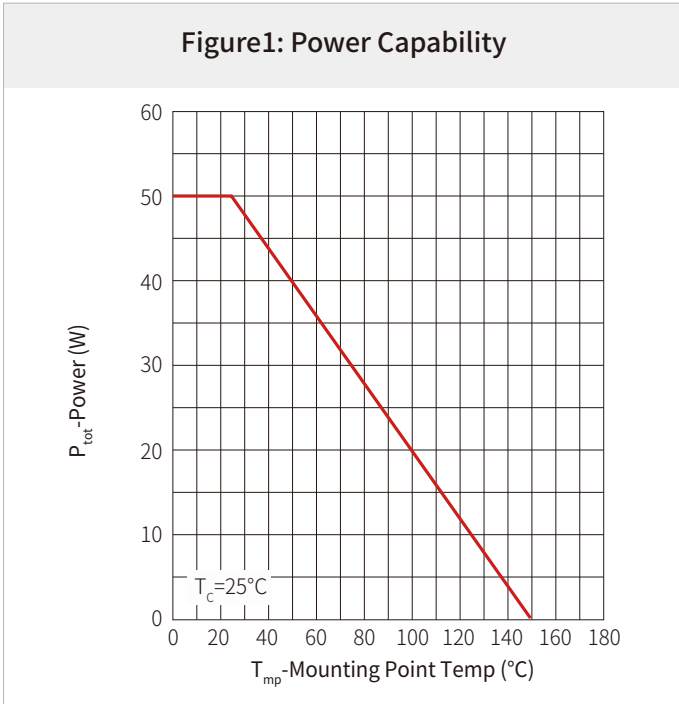


Figure2: Current Capability

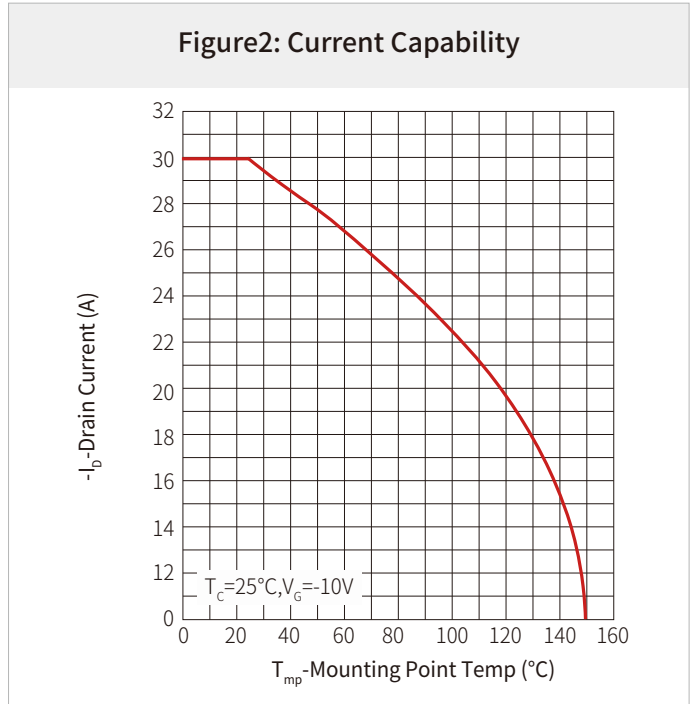


Figure3: Safe operating Area

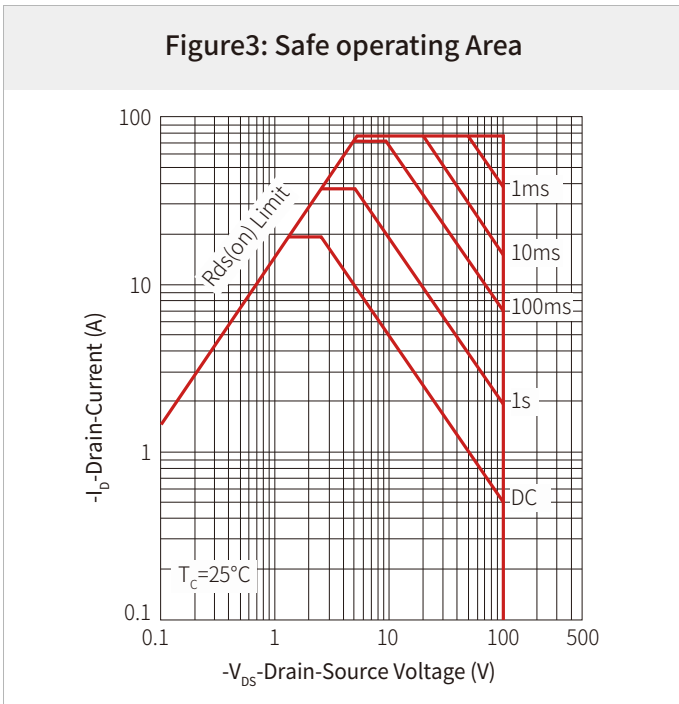
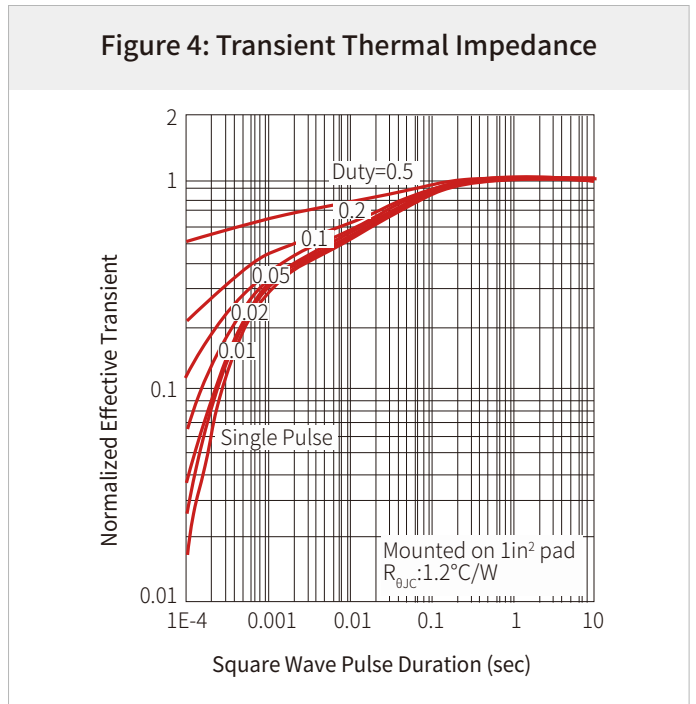
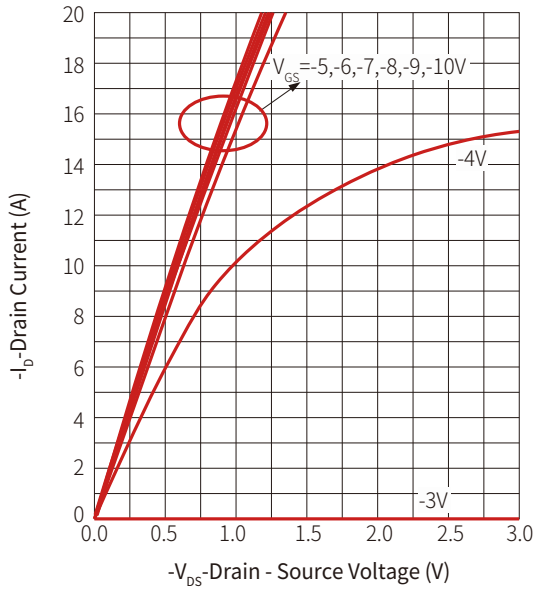


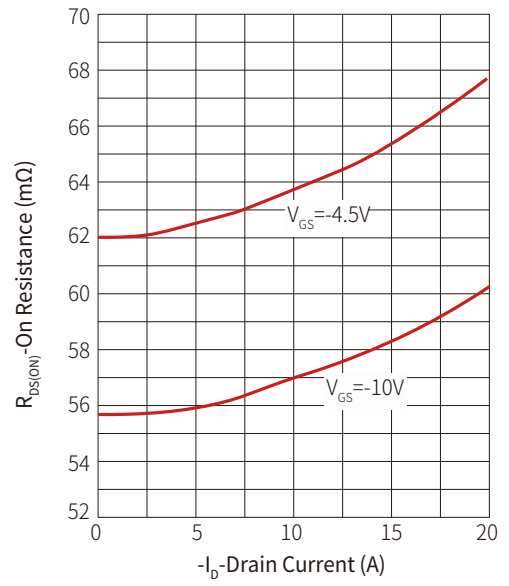
Figure 4: Transient Thermal Impedance



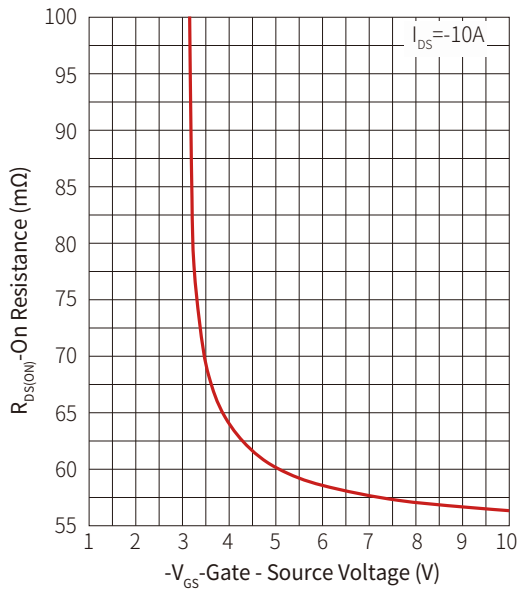
**Figure 5: Output Characteristics**



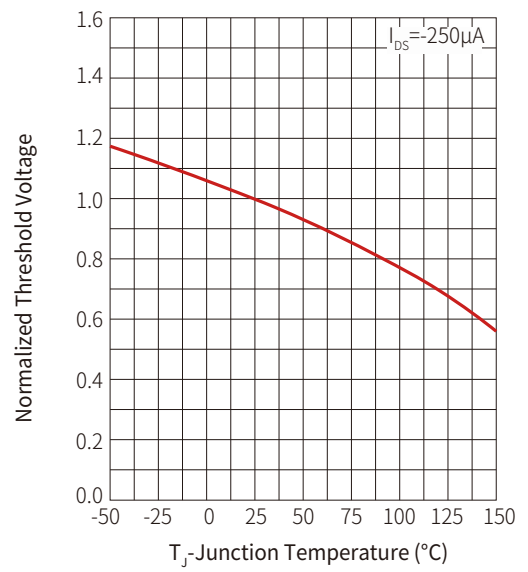
**Figure 6: On Resistance**



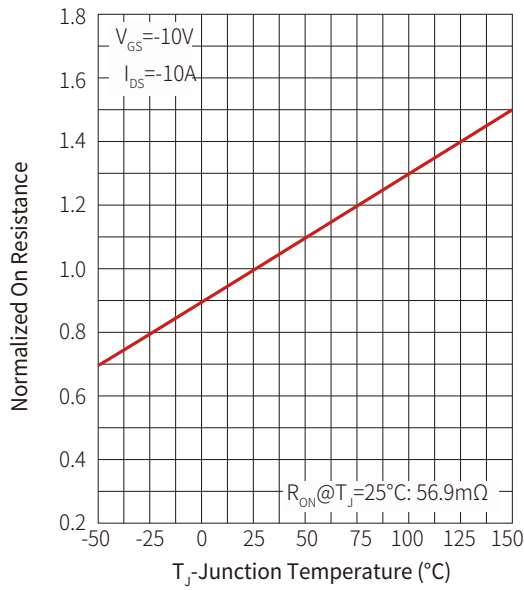
**Figure 7: Transfer Characteristics**



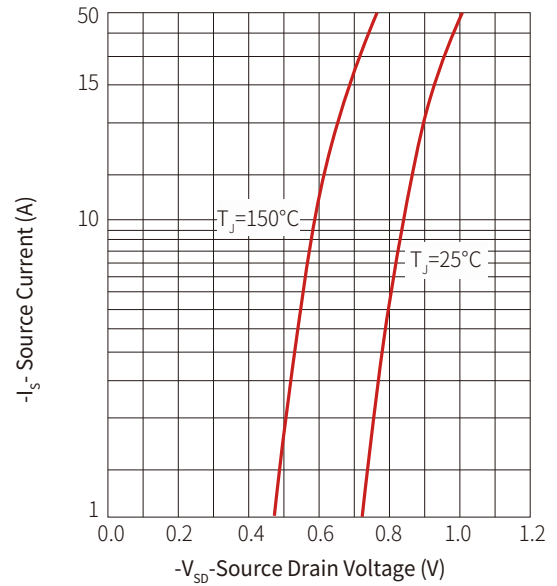
**Figure 8: Normalized Threshold Voltage**



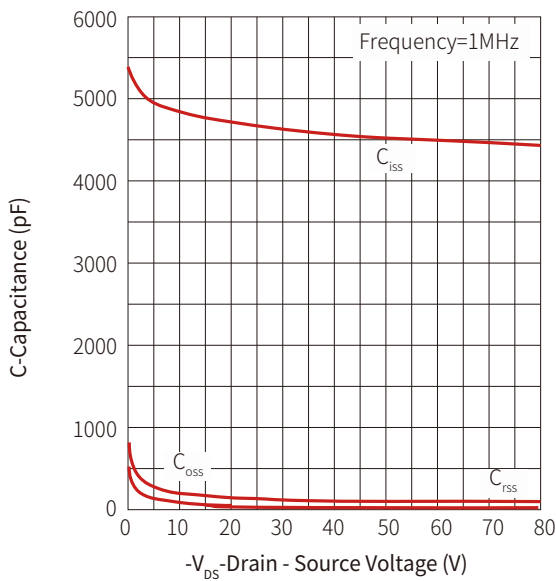
**Figure 9: Normalized On Resistance**



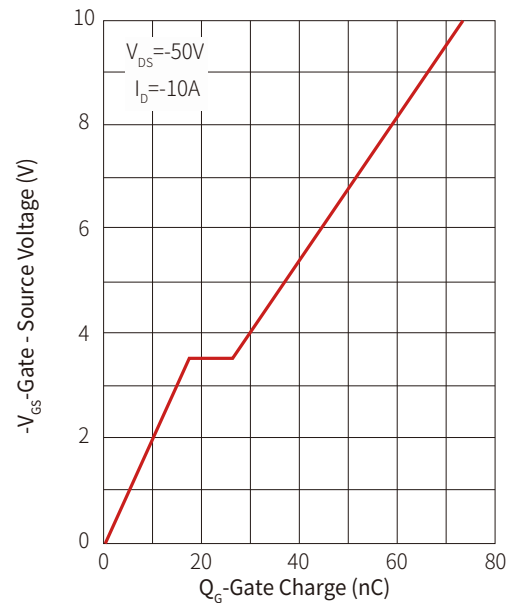
**Figure 10: Diode Forward Current**



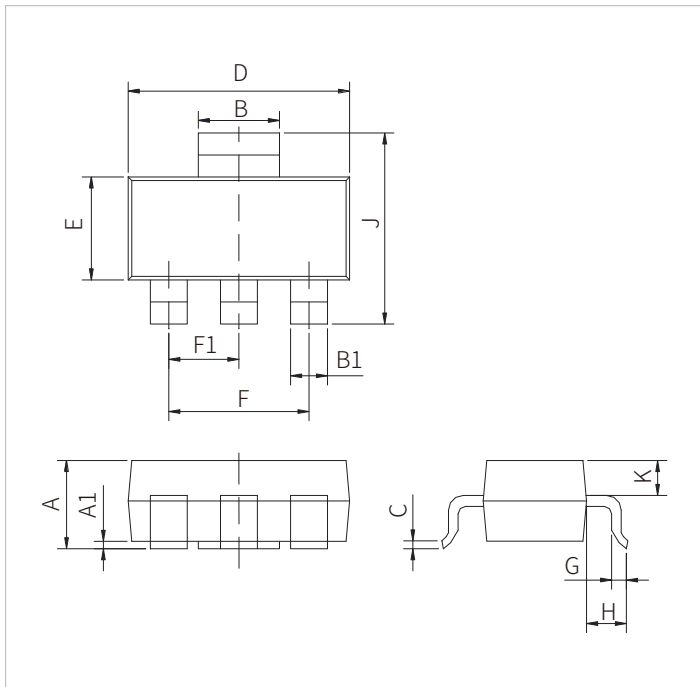
**Figure 11: Capacitance**



**Figure 12: Gate Charge**



## SOT-223 PACKAGE DIMENSIONS



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	1.50		1.60	0.059		0.065
A1	0.01		0.06	0.001		0.004
B	2.90		3.10	0.118		0.122
B1	0.60		0.80	0.048		0.052
C	0.22		0.32	0.009		0.013
D	6.30		6.70	0.248		0.264
E	3.30		3.70	0.130		0.146
F		4.60			0.181	
F1		2.30			0.091	
G	0.70		1.10	0.028		0.043
H	1.50		2.00	0.059		0.079
J	6.70		7.30	0.264		0.287
K		0.90			0.035	

## ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SPM30P10V	SOT-223	2500PCS	7"

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