

FEATURES

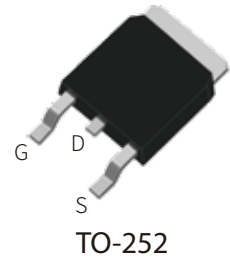
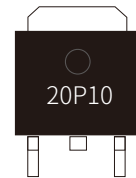
- | Super Low Gate Charge

- | 100% EAS Guaranteed

- | Green Device Available

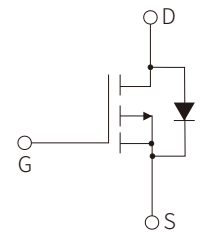
- | Excellent CdV/dt effect decline

- | Advanced high cell density Trench technology


TO-252

Marking

APPROVALS

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


Schematic Symbol

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-100	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C=25^\circ\text{C}$	I_D	-20	A
	$T_C=100^\circ\text{C}$		-11	
Pulsed Drain Current ¹		I_{DM}	-72	A
Single Pulse Avalanche Energy ²		EAS	132.25	mJ
Total Power Dissipation $T_C=25^\circ\text{C}$		P_D	70	W
Thermal Resistance from Junction-to-Ambient ³		$R_{\theta JA}$	75	$^\circ\text{C}/\text{W}$
Thermal Resistance from Junction-to-Case		$R_{\theta JC}$	1.78	$^\circ\text{C}/\text{W}$
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

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	-100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-100V, V _{GS} =0V, T _J = 25°C			-1	μA
		V _{DS} =-100V, V _{GS} =0V, T _J = 100°C			-100	
Gate-body Leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1	-1.8	-2.5	V
Drain-Source On-Resistance ⁴	R _{DS(on)}	V _{GS} =-10V, I _D =-10A		80	100	mΩ
		V _{GS} =-4.5V, I _D =-6A		88	120	mΩ
Forward Transconductance ⁴	g _{fs}	V _{DS} =-10V, I _D =-10A		30		S
Dynamic Characteristics⁵						
Input Capacitance	C _{iss}	V _{DS} =-50V, V _{GS} =0V Frequency = 1 MHz		3985		pF
Output Capacitance	C _{oss}			85		pF
Reverse Transfer Capacitance	C _{rss}			71		pF
Gate Resistance	R _g	f = 1MHz		4		Ω
Switching Characteristics⁵						
Turn-On Delay Time	t _{d(on)}	V _{DD} = - 50V, V _{GS} = - 10V, R _g =3 Ω, I _D = - 10A		12.8		nS
Turn-On Rise Time	t _r			30		nS
Turn-Off Delay Time	t _{d(off)}			82		nS
Turn-Off Fall Time	t _f			61		nS
Total Gate Charge	Q _g	V _{DS} =-50V, V _{GS} =-10V, I _D =-10A		65		nC
Gate- Source Charge	Q _{gs}			10.2		nC
Gate- Drain Charge	Q _{gd}			13		nC
Body Diode Reverse Recovery Time	t _{rr}	I _F = -10A, di/dt= 100A/μs		62		ns
Body Diode Reverse Recovery Charge	Q _{rr}			56		nC
Drain-Source Body Diode Characteristics						
Diode Forward Voltage ⁴	V _{SD}	I _S = -10A, V _{GS} =0V			-1.2	V
Continuous Source Current T _C = 25°C	I _S				-20	A

Notes:

- Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=150°C.
- The EAS data shows Max. rating . The test condition is V_{DD} = -35V, V_{GS} = -10V, L= 0.5mH, I_{AS} = -23A
- The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
- The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
- This value is guaranteed by design hence it is not included in the production test..

PARAMETER CHARACTERISTIC CURVE

Figure1 : Output Characteristics

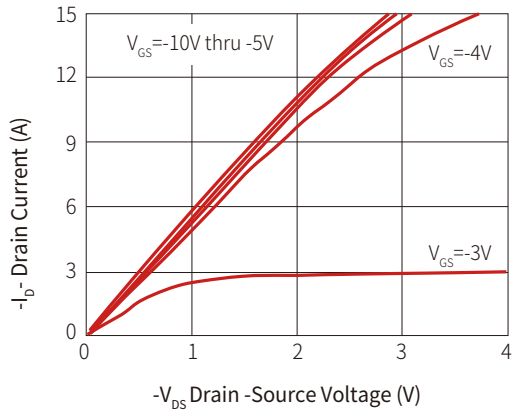


Figure2 : Transfer Characteristics

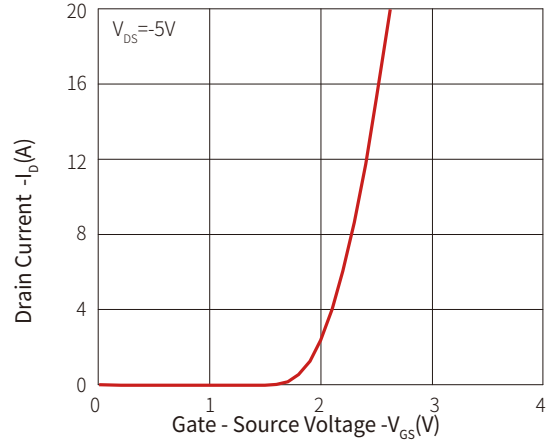


Figure3 : Forward Characteristics of Reverse

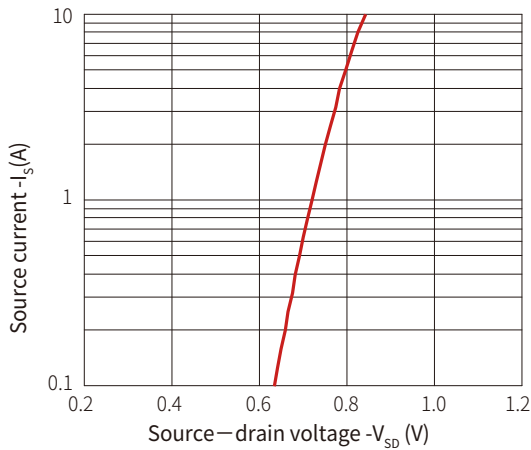


Figure4 : $R_{DS(on)}$ vs V_{GS}

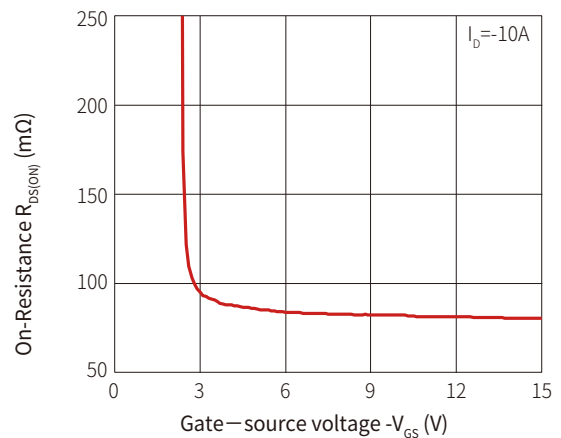


Figure5 : $R_{DS(on)}$ vs I_D

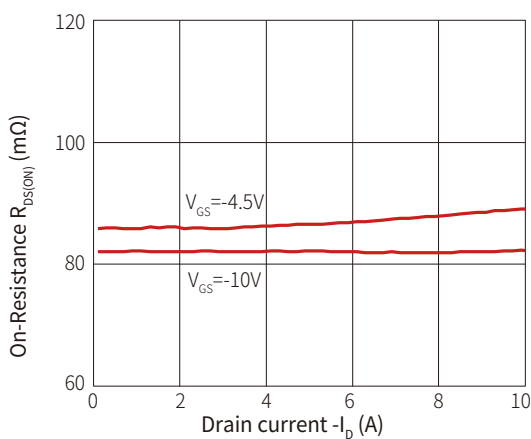


Figure6 : Normalized $R_{DS(on)}$ vs. Temperature

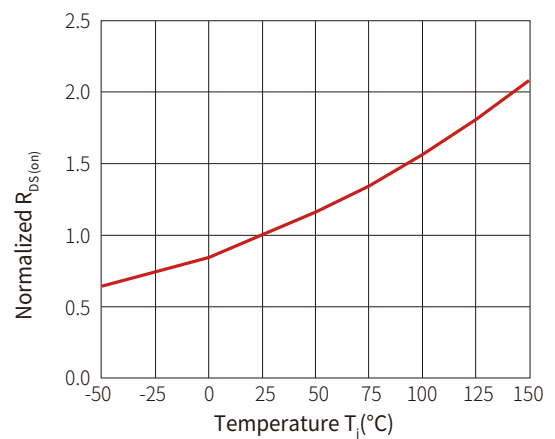
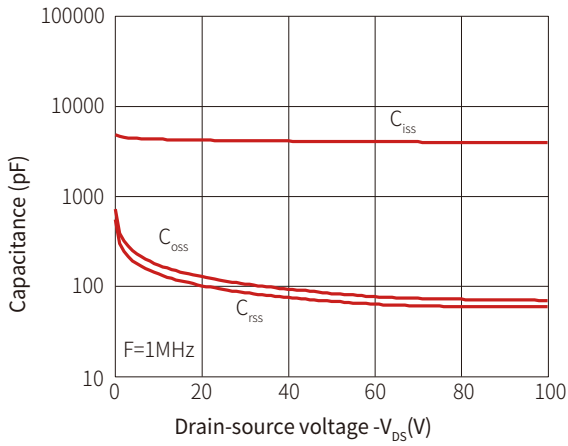
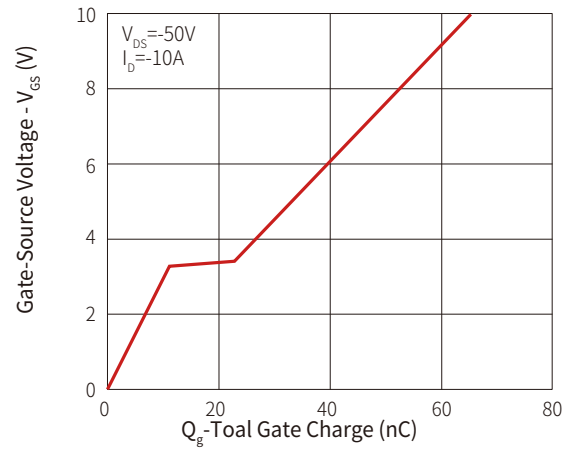
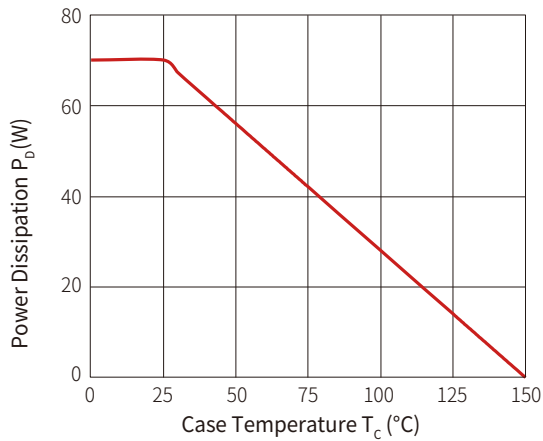
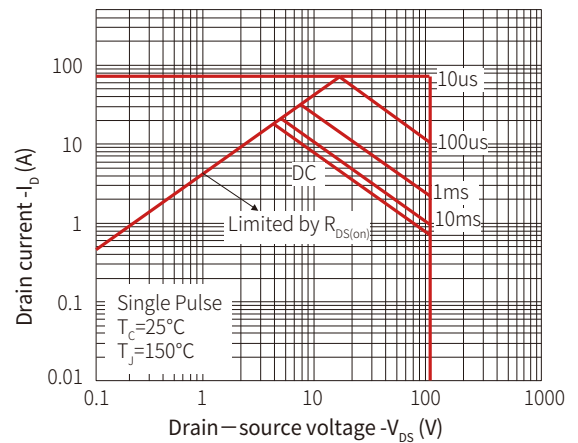
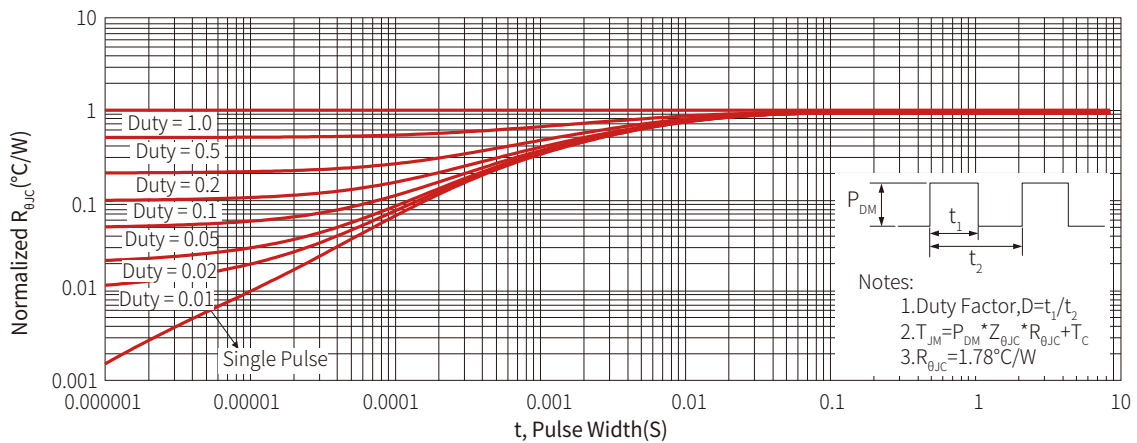
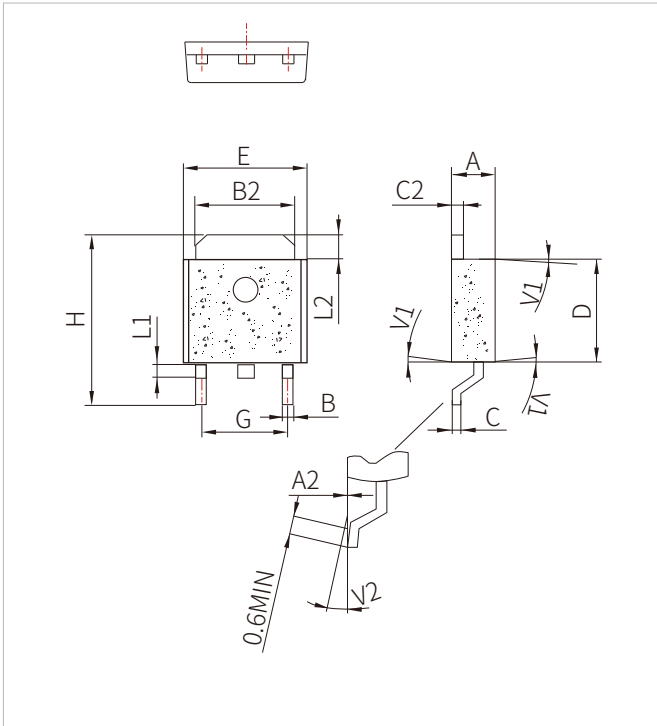


Figure7 : Capacitance Characteristics

Figure8 : Gate Charge Characteristics

Figure9 : Power Dissipation

Figure10 : Safe Operating Area

Figure11 : Normalized Maximum Transient Thermal Impedance


TO-252 PACKAGE MECHANICAL DATA



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0.03		0.23	0.001		0.009
B	0.55		0.65	0.022		0.026
B2	5.10		5.40	0.200		0.213
C	0.45		0.62	0.018		0.024
C2	0.48		0.62	0.019		0.024
D	6.00		6.20	0.236		0.244
E	6.40		6.80	0.252		0.268
G	4.40		4.70	0.173	0.1	0.185
H	9.35		10.7	0.368		0.421
L1	1.30		1.70	0.051	0.143	0.067
L2	1.37		1.50	0.054		0.059
V1		4°			0.130	
V2	0°		8°	0°		8°

ORDERING INFORMATION

Part Number	Component Package	QTY/Reel	Reel Size
SPM20P10	TO-252	2500PCS	13"

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