

FEATURES

| $V_{DS} = -100V$, $I_D = -10A$

| $R_{DS(ON)}$ (TYP) = 180m Ω @ $V_{GS} = -10V$

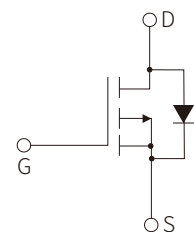
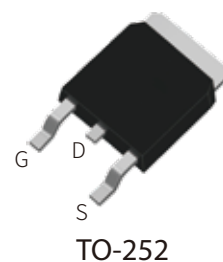
| $R_{DS(ON)}$ (TYP) = 210m Ω @ $V_{GS} = -4.5V$

| Very Low On- resistance $R_{DS(ON)}$

| Low C_{rss}

| Fast switching

| 100% avalanche tested



Schematic Symbol

APPLICATION

| PWM applications

| Load switch

| Power management

APPROVALS

RoHS Compliance with 2011/65/EU

HF Compliance with IEC61249-2-21:2003

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	-100	V
Gate-Source Voltage		V_{GSS}	± 20	V
Continuous Drain Current	$T_C = 25^\circ C$	I_D	-10	A
	$T_C = 100^\circ C$		-4	
Pulsed Drain Current ¹		I_{DM}	-20	A
Single Pulse Avalanche Energy ²		E_{AS}	48.1	mJ
Total Power Dissipation $T_C = 25^\circ C$		P_D	10	W
Thermal Resistance from Junction-to-Case		$R_{\theta JC}$	8	$^\circ C/W$
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^\circ C$

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-100			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-100V, V_{GS}=0V$			-1	μA
		$V_{DS}=-80V, V_{GS}=0V, T_J=85^{\circ}C$			-30	μA
Gate-body Leakage current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.2		-2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-3A$		180	220	m Ω
		$V_{GS}=-4.5V, I_D=-2A$		210	255	m Ω
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=-30V, V_{GS}=0V$ $f=1.0\text{ MHz}$		1228		pF
Output Capacitance	C_{oss}			41		pF
Reverse Transfer Capacitance	C_{rss}			29		pF
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=-10V, V_{GS}=-30V,$ $R_G=3.3\Omega, I_D=-1A$ $T_J=25^{\circ}C$		9		nS
Turn-On Rise Time	t_r			6		nS
Turn-Off Delay Time	$t_{d(off)}$			39		nS
Turn-Off Fall Time	t_f			33		nS
Total Gate Charge	Q_g	$V_{DS}=-30V, V_{GS}=-10V, I_D=-2A$		19		nC
Gate- Source Charge	Q_{gs}			4.4		nC
Gate- Drain Charge	Q_{gd}			2.9		nC
Drain-Source Body Diode Characteristics						
Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}				1.4	A
Diode Forward Voltage	V_{SD}	$I_{SD}=-3A, V_{GS}=0V, T_J=25^{\circ}C$			-1.2	V
Maximum Continuous Drain-Source Diode Forward Current	I_S				-10	A

Notes:

- 1 . Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
- 2 . EAS condition: T_J = 25°C, V_{DD} = 15V, V_G = 10V, R_G = 25Ω, L = 0.5mH
- 3 . Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 0.5%.

PARAMETER CHARACTERISTIC CURVE

Figure1 : Typical Output Characteristics

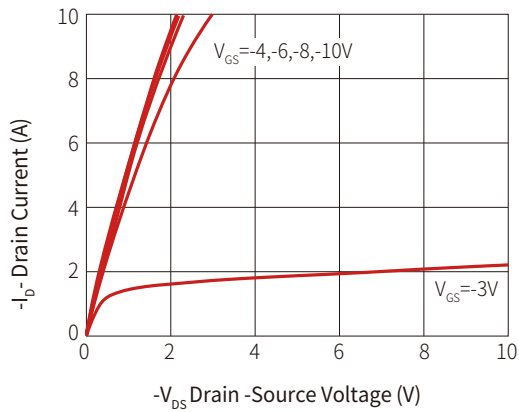


Figure2 : On-Resistance vs G-S Voltage

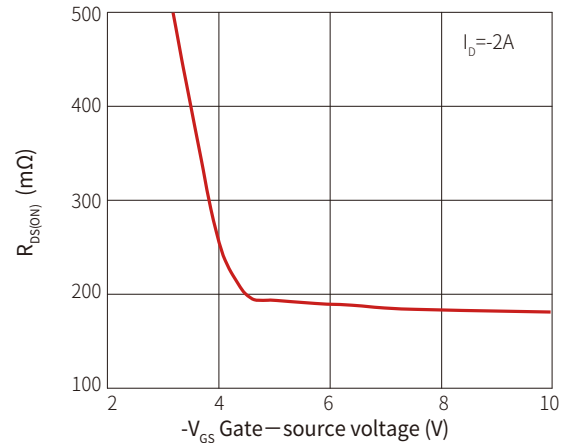


Figure3 : Source Drain Forward Characteristics

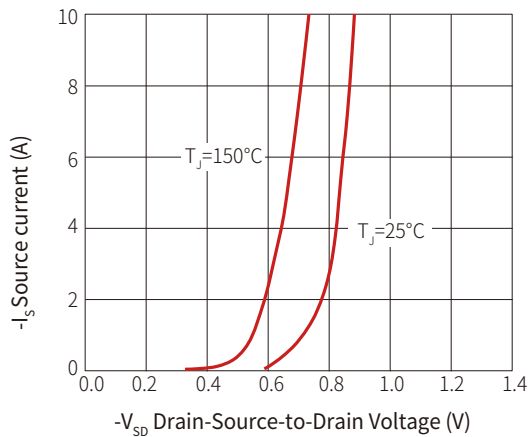


Figure4 : Gate-Charge Characteristics

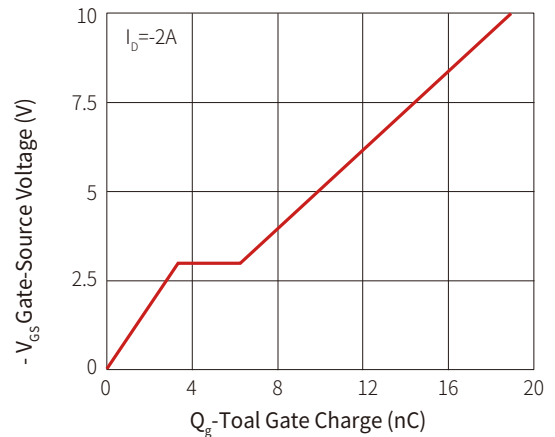


Figure5 : Normalized $V_{GS(th)}$ vs T_J

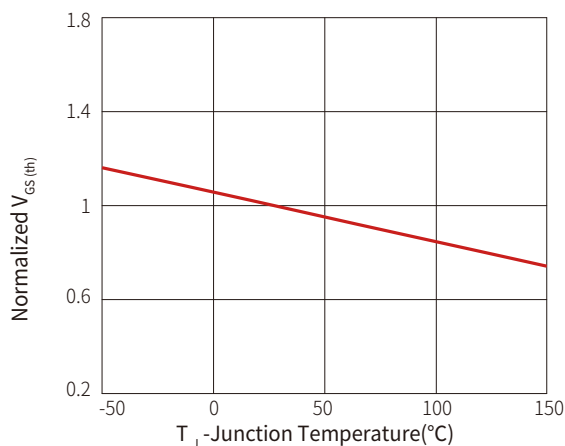


Figure6 : Normalized $R_{DS(on)}$ vs T_J

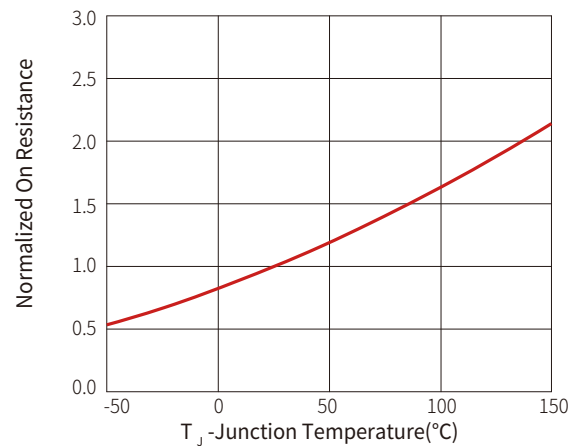
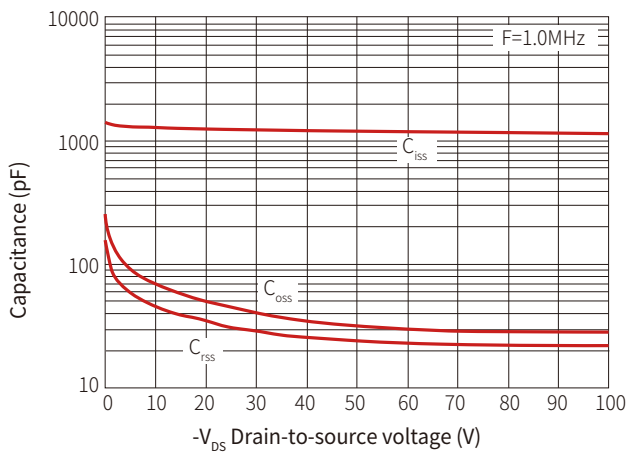
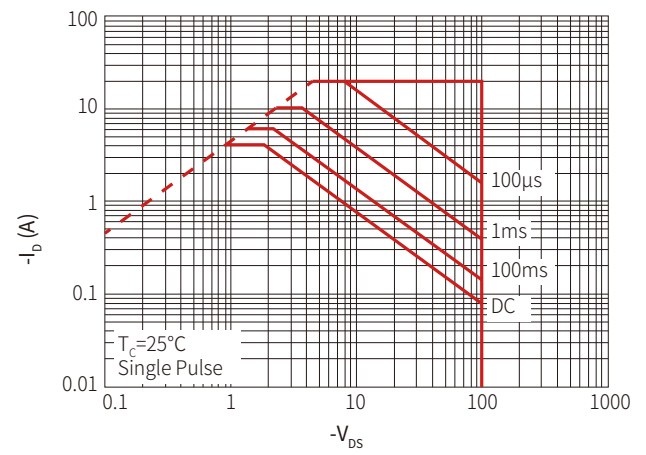
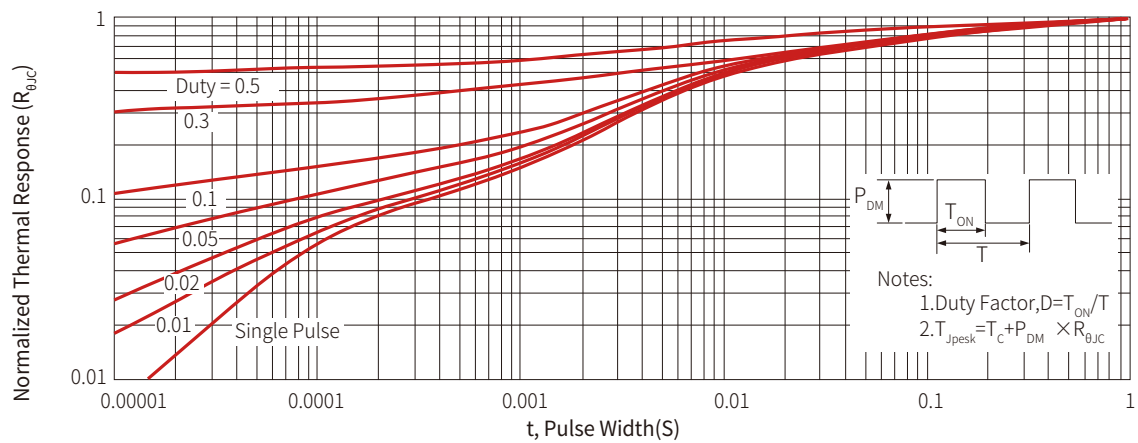
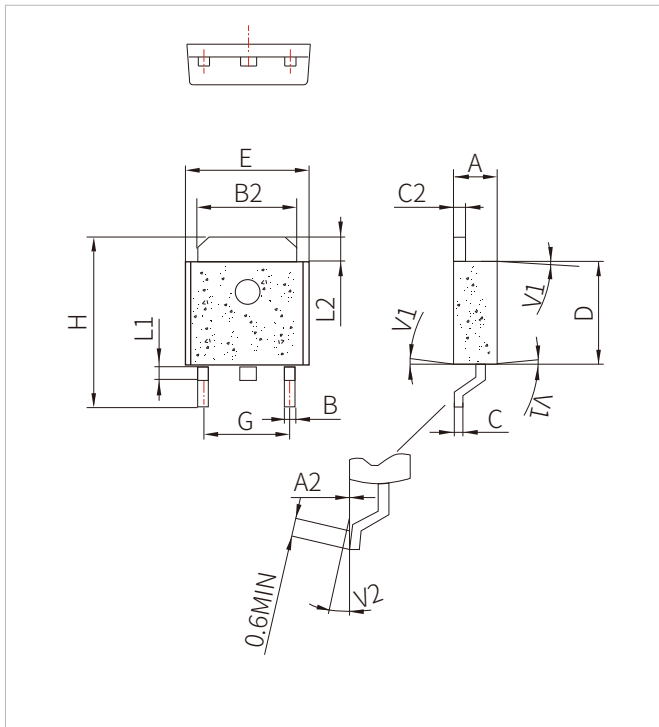


Figure7 : Capacitance

Figure8 : Safe Operating Area

Figure9 : 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	0.50		1.00	0.020		0.039
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	5.30		6.40	0.209		0.252
E	6.10		6.80	0.240		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	Marking	QTY/Reel	Reel Size
SPM10P10D	TO-252	10P10 XXXXX	2500PCS	13"

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