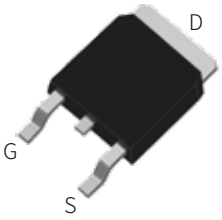
FEATURES

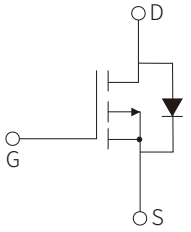
- 100% EAS Guaranteed
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology



TO-252

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}	-40	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25°C	I_D	-50	A
	T_C=100°C		-31	
Pulsed Drain Current[1]		I_{DM}	-200	A
Single Pulse Avalanche Energy[2]		EAS	80	mJ
Total Power Dissipation T_C=25°C		P_D	55	W
Thermal Resistance from Junction-to-Ambient[3]		$R_{\theta JA}$	61	°C/W
Thermal Resistance from Junction-to-Case		$R_{\theta JC}$	2.27	°C/W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 to 150	°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	-40			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-40V,V_{GS}=0V,T_J= 25°C			-1	μA
		V_{DS}=-40V,V_{GS}=0V,T_J= 100°C			-5	
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	-1.0	-1.6	-2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-10V,I_D=-16A		7.8	10.8	mΩ
		V_{GS}=-4.5V,I_D=-12A		12	17.8	mΩ
Forward Transconductance	g_{fs}	V_{DS}=-10V,I_D=-16A		44		S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-20V,V_{GS}=0V f = 1 MHz		3050		pF
Output Capacitance	C_{oss}			282		pF
Reverse Transfer Capacitance	C_{rss}			230		pF
Gate Resistance	R_g	f = 1MHz		9		Ω
Switching Characteristics						
Turn–On Delay Time	$t_{d(on)}$	V_{DD}= -15V, V_{GS} =-10V, R_G=3Ω, I_D =-16A		38		nS
Turn–On Rise Time	t_r			31		nS
Turn–Off Delay Time	$t_{d(off)}$			90		nS
Turn–Off Fall Time	t_f			9.2		nS
Total Gate Charge	Q_g	V_{DS}=-20V,V_{GS}=-10V,I_D=-16A		28		nC
Gate- Source Charge	Q_{gs}			8		nC
Gate- Drain Charge	Q_{gd}			8.5		nC
Drain-Source Body Diode Characteristics						
Diode Forward Voltage	V_{SD}	I_S = -1A, V_{GS} =0V			-1.2	V
Continuous Source Current T_C= 25°C	I_S				-50	A

PARAMETER CHARACTERISTIC CURVE

Figure1 : Output Characteristics

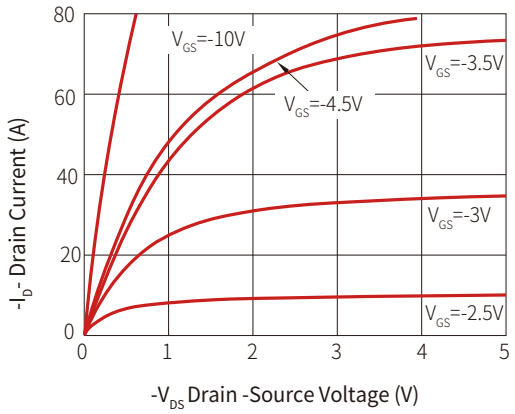


Figure2 : Transfer Characteristics

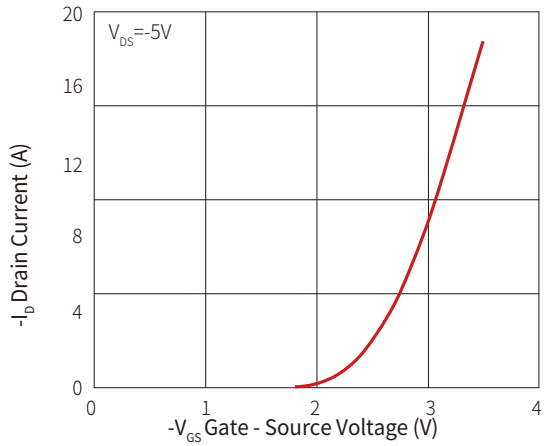


Figure3 : Forward Characteristics of Reverse

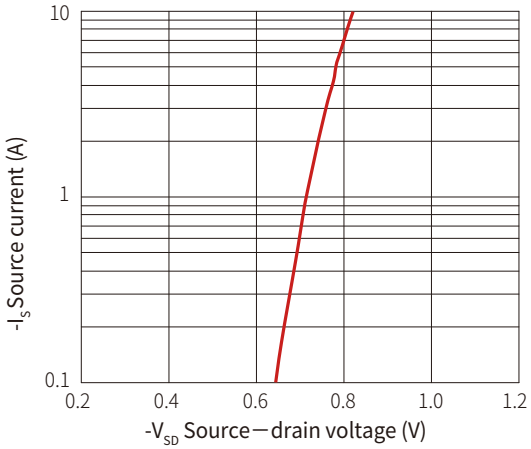


Figure4 : $R_{DS(ON)}$—— V_{GS}

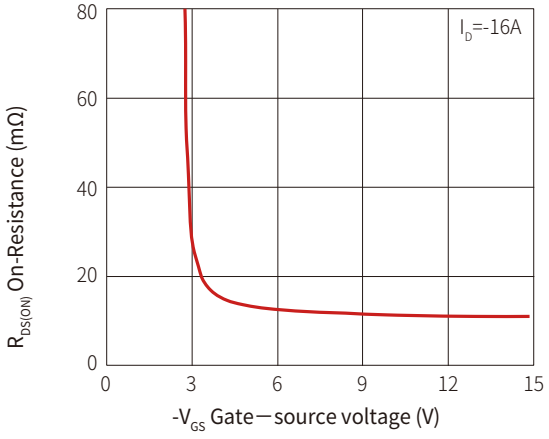


Figure5 : $R_{DS(ON)}$—— I_D

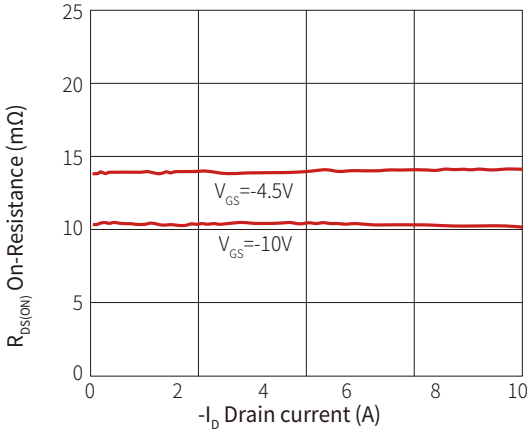


Figure6 : Normalized $R_{DS(on)}$ vs. Temperature

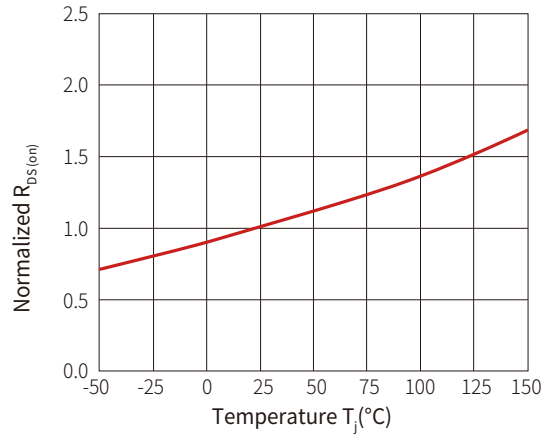


Figure7 : Capacitance Characteristics

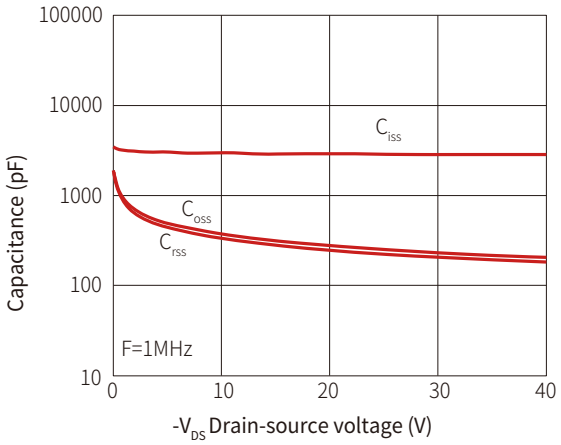


Figure8 : Gate Charge Characteristics

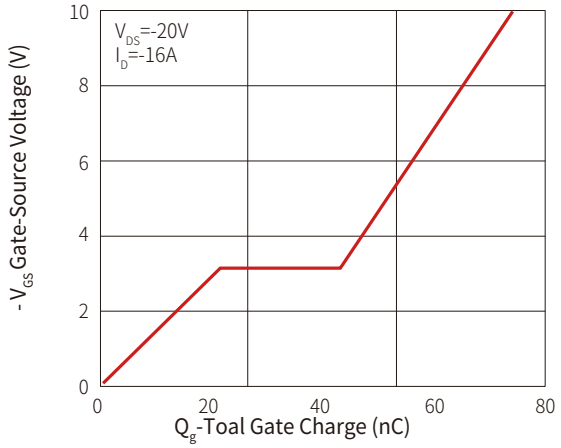


Figure9 : Power Dissipation

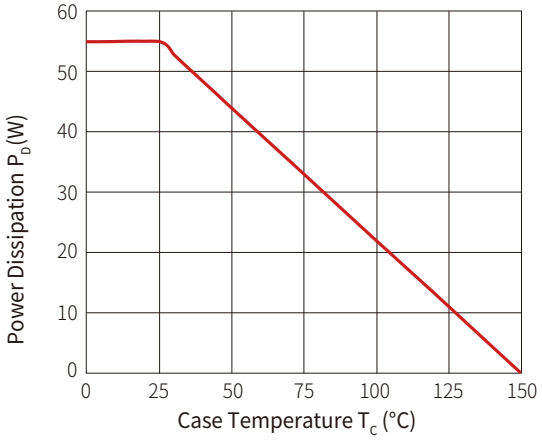


Figure10 : Safe Operating Area

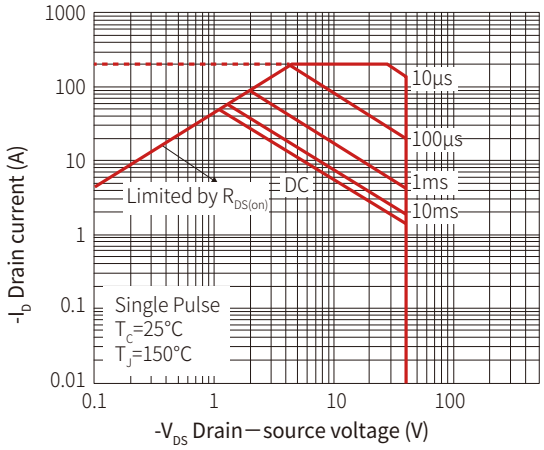
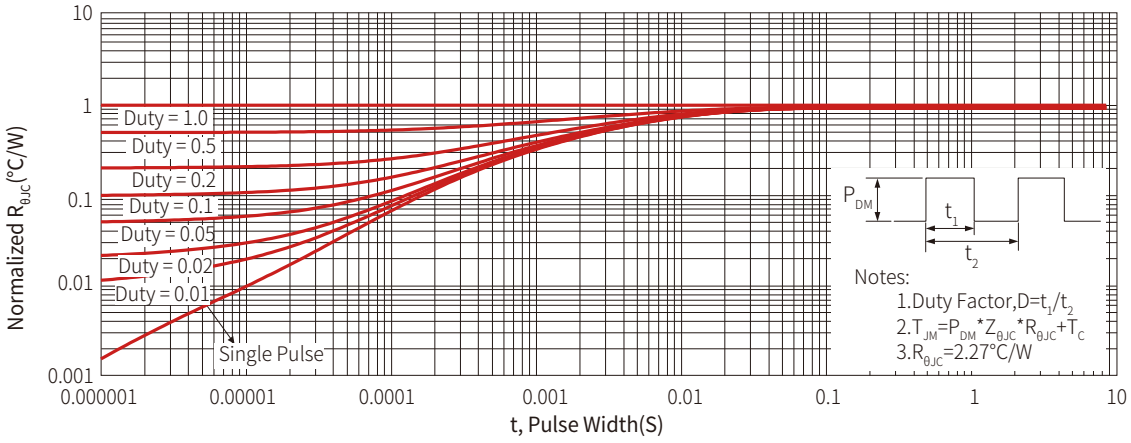
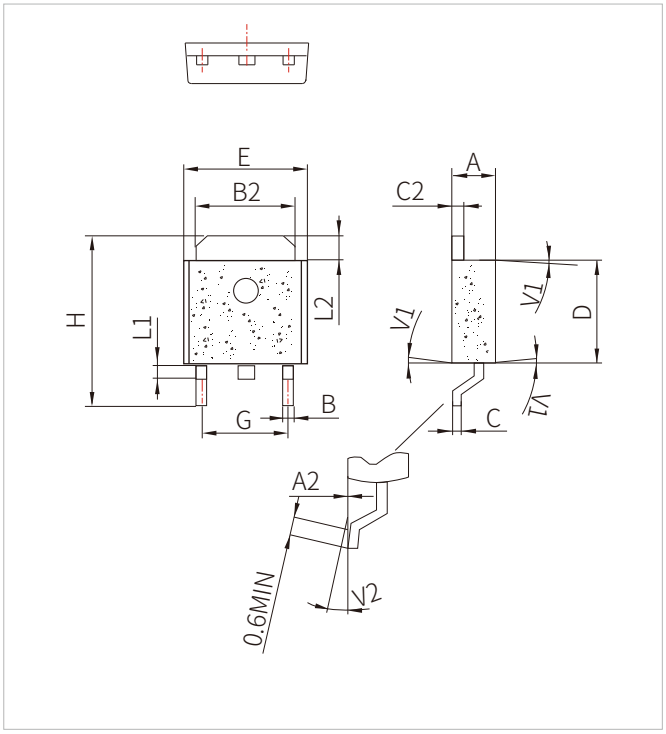


Figure11 : Normalized Maximum Transient Thermal Impedance



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	0.50		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
SPM50P04D	TO-252	50P04 XXXX	2500PCS	13”

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