

FEATURES

- | $V_{DS} = -100V, I_D = -30A$

- | $R_{DS(ON)}$ (at $V_{GS} = -10V$) $< 55 m\Omega$

- | $R_{DS(ON)}$ (at $V_{GS} = -4.5V$) $< 64 m\Omega$

- | 100% EAS Tested

- | 100% ∇V_{DS} Tested

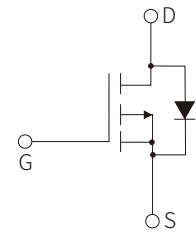
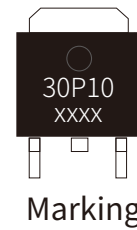
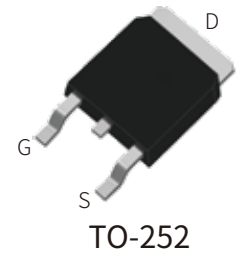
APPLICATION

- | Power management

- | Portable equipment

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 (Note 1,2) Steady-State	I_D	$T_A = 25^\circ C, V_{GS} = -10V$	-4.7
		$T_A = 100^\circ C, V_{GS} = -10V$	-3
Continuous Drain Current (Note 1,3) Steady-State	I_D	$T_C = 25^\circ C, V_{GS} = -10V$	-30
		$T_C = 100^\circ C, V_{GS} = -10V$	-17.7
Pulsed Drain Current $T_C = 25^\circ C, tp = 100\mu s$	I_{DM}	-100	A
Total Power Dissipation (Note 1,2) Steady-State	P_D	$T_A = 25^\circ C$	2.5
		$T_A = 100^\circ C$	1
Total Power Dissipation (Note 1,3) Steady-State	P_D	$T_C = 25^\circ C$	89
		$T_C = 100^\circ C$	35
Avalanche energy $V_G = -10V, R_G = 25\Omega, L = 0.5mH, I_{AS} = -21.7A$	E_{AS}	117.7	mJ
Thermal Resistance Junction-to-Ambient (Note 2) Steady-State	$R_{\theta JA}$	50	$^\circ C/W$
Thermal Resistance Junction-to-Case Steady-State	$R_{\theta JC}$	1.4	$^\circ C/W$
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
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-100			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA	-1.5	-2.0	-2.5	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-100V, V _{GS} =0V			-1	μA
		V _{DS} =-100V, V _{GS} =0V, T _J =150°C			-100	
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-10V, I _D =-20A		42	55	mΩ
		V _{GS} =-4.5V, I _D =-15A		46	64	
Diode Forward Voltage	V _{SD}	I _S =-20A, V _{GS} =0V			-1.2	V
Gate resistance	R _G	f=1MHz		6		Ω
Maximum Body-Diode Continuous Current	I _S				-30	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-50V, f=1MHz		3480		pF
Output Capacitance	C _{oss}			145		pF
Reverse Transfer Capacitance	C _{rss}			118		pF
Switching Parameters						
Turn-on Delay Time	t _{D(on)}	V _{GS} =-10V, V _{DD} =-50V R _{GEN} =3Ω, I _D =-20A		13		nS
Turn-on Rise Time	t _r			24		nS
Turn-Off Delay Time	t _{D(off)}			120		nS
Turn-Off Fall Time	t _f			61		nS
Total Gate Charge	Q _g	V _{DS} =-50V, V _{GS} =-10V, I _D =-20A		71		nC
Gate-Source Charge	Q _{gs}			10.8		nC
Gate-Drain Charge	Q _{gd}			16.8		nC
Reverse Recovery Charge	Q _{rr}	I _F =-20A, di/dt=100A/μs		47		nC
Reverse Recovery Time	t _{rr}			32		ns

Note:
1. The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.

2. The value of R_{θJA} is measured with the device mounted on the 40mm*40mm*1.1mm single layer FR-4 PCB board with 1 in² pad of 2oz. Copper, in the still air environment with T_A=25°C. The maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.

3. Thermal resistance from junction to soldering point (on the exposed drain pad).

PARAMETER CHARACTERISTIC CURVE

Figure 1: Output Characteristics

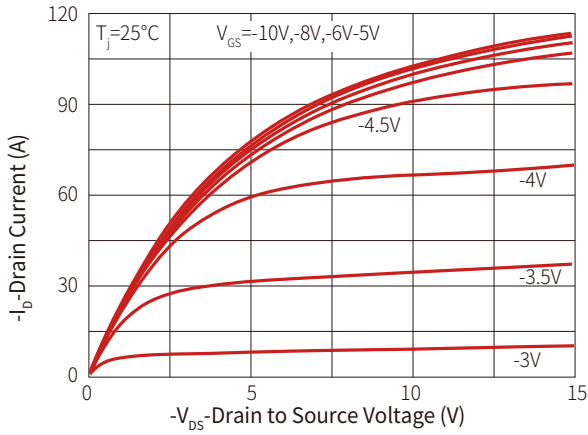


Figure 2: Transfer Characteristics

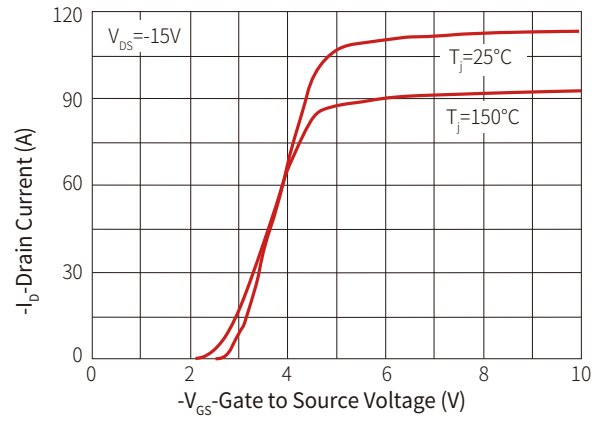


Figure 3: Capacitance Characteristics

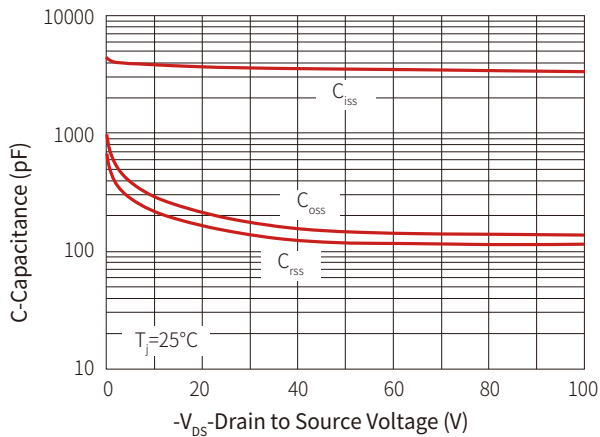


Figure 4: Gate Charge

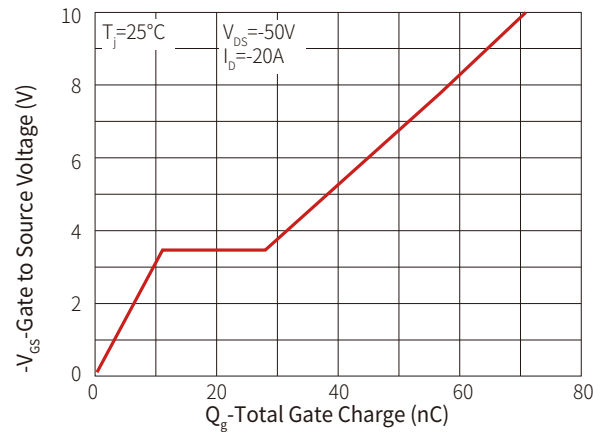


Figure 5: On-Resistance vs Gate to Source Voltage

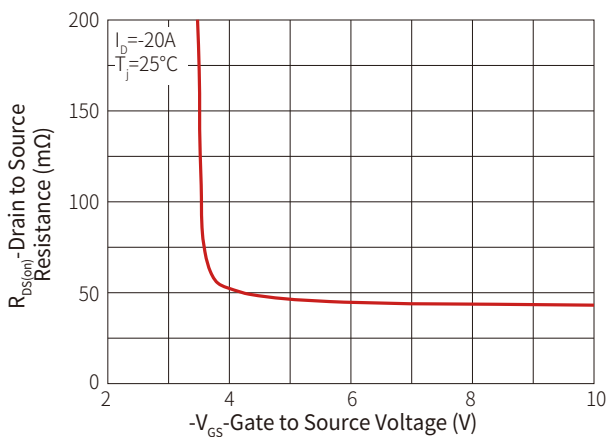


Figure 6: Normalized On-Resistance

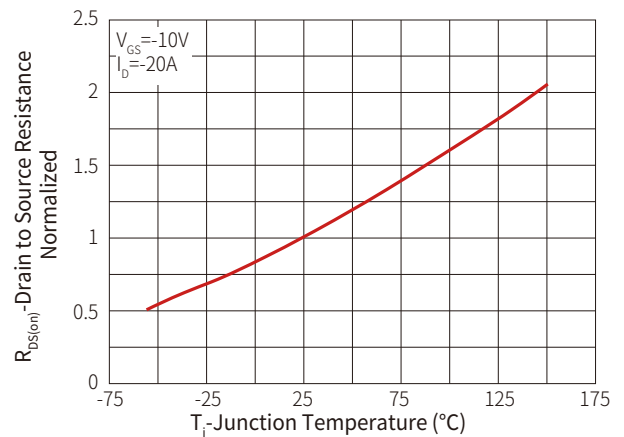


Figure 7: $R_{DS(on)}$ VS Drain Current

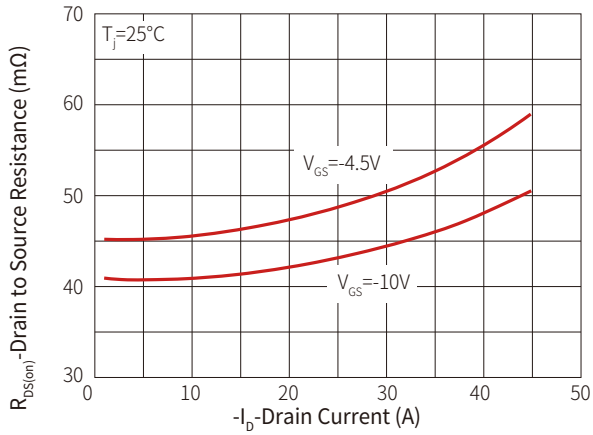


Figure 8: Forward Characteristics Of Reverse Diode

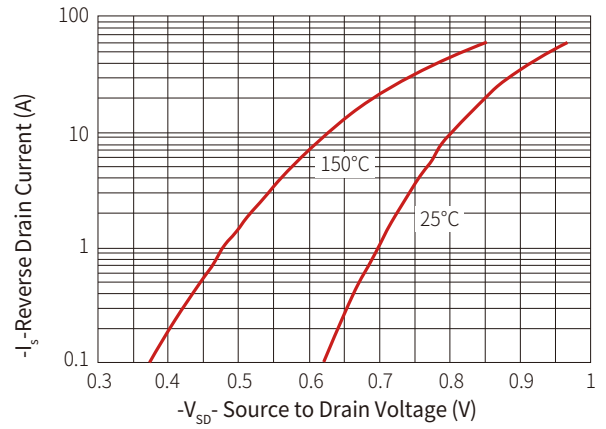


Figure 9: Normalized Breakdown Voltage

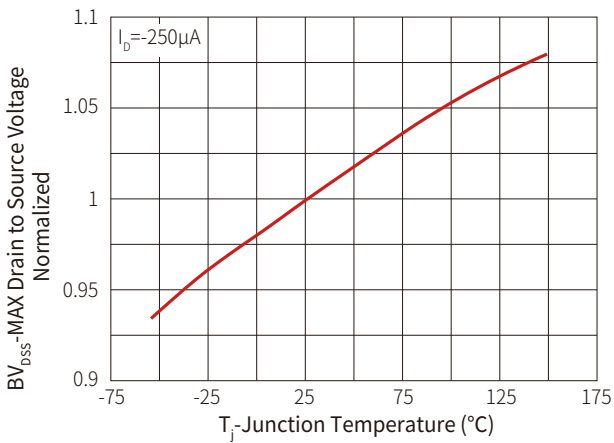


Figure 10: Normalized Threshold Voltage

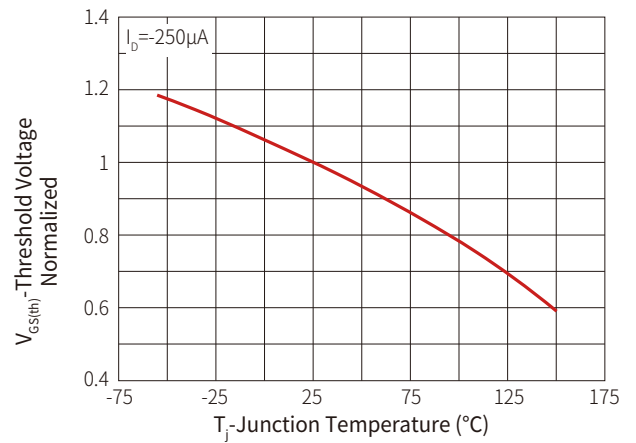


Figure 11: Current Dissipation

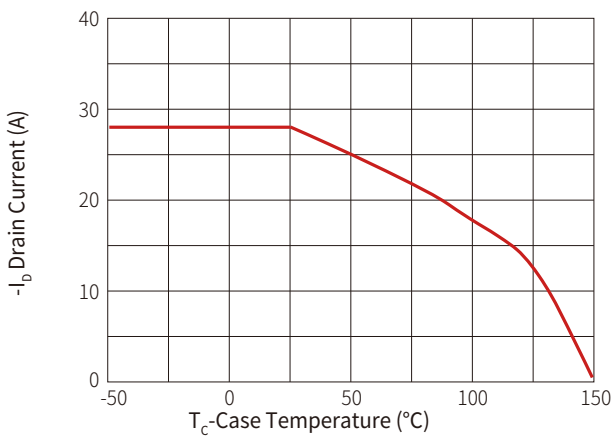


Figure 12: Power Dissipation

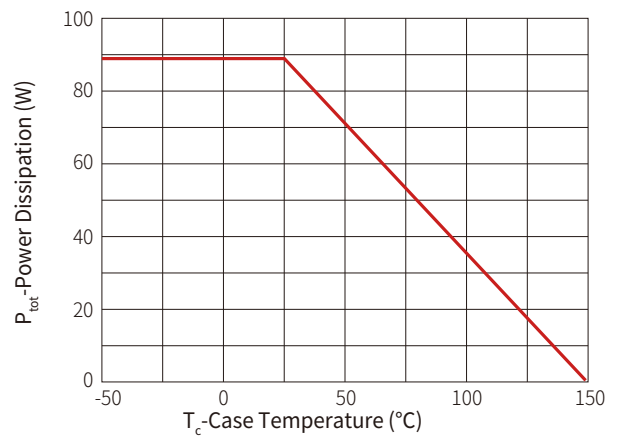
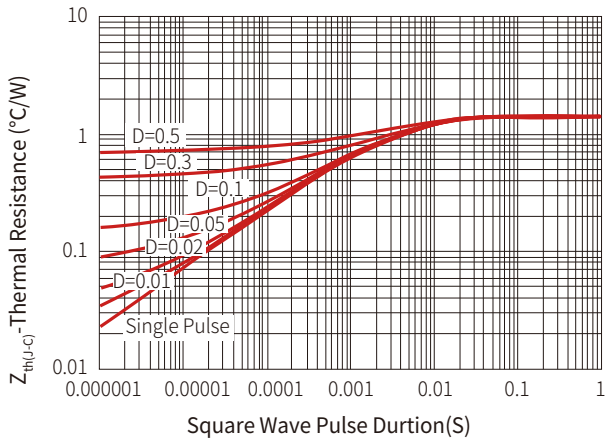
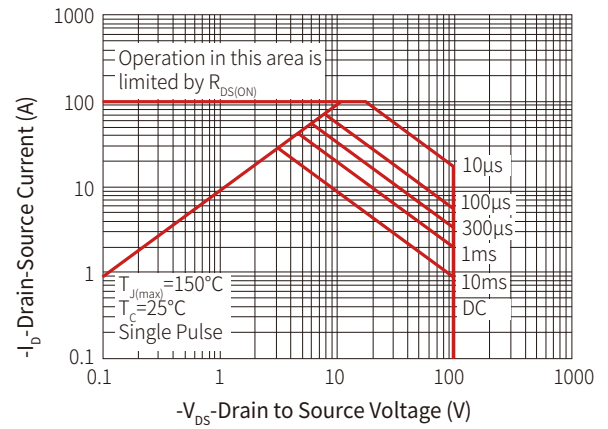
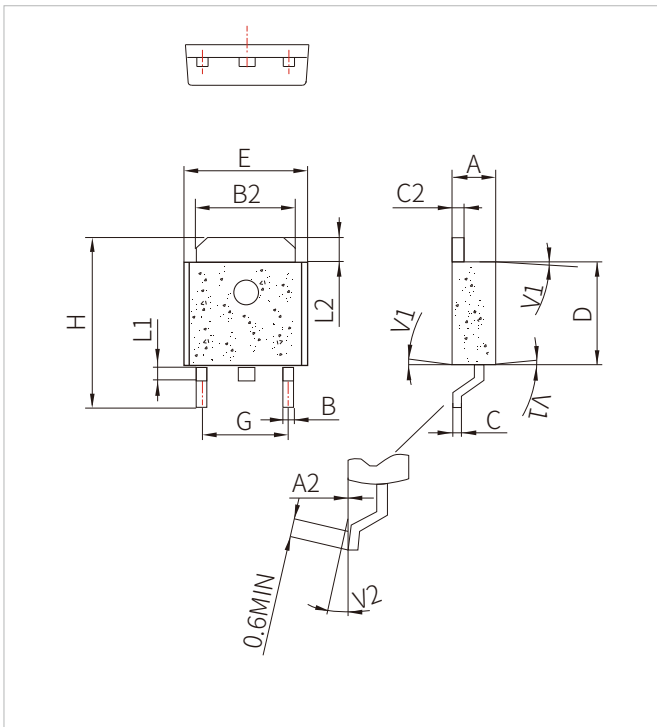


Figure 13: Maximum Transient Thermal Impedance

Figure 14: Safe Operation Area


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
SPM30P10D	TO-252	2500PCS	13"

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