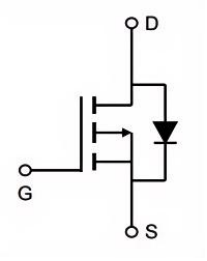
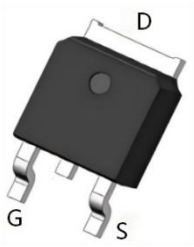
P-Channel Enhancement Mode MOSFET

Parameter	Value	Unit
V_{DS}	-40	V
$R_{DS(on)}$	13.5	mΩ
I_D	-40	A





TO-252

Features

- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

Applications

- DC-DC Converters
- Power Switch

Absolute Maximum Ratings(Ta=25℃,unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	-40	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	Ta=25℃	I_D	-40	A
Continuous Drain Current	Ta=100℃	I_D	-22	
Pulsed Drain Current		I_{DM}	-140	A
Single Pulse Avalanche Energy		EAS	57.8	mJ
Total Power Dissipation	Ta=25℃	P_D	40.3	W
Storage Temperature Range		T_{STG}	-55 to 150	℃
Operating Junction Temperature Range		T_J	-55 to 150	℃

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction-ambient	$R_{\theta JA}$	--	66	℃/W
Thermal Resistance Junction-Case	$R_{\theta JC}$	--	3.1	℃/W

Electrical Characteristics(T_J=25℃,unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V , I_D=-250uA	-40	--	--	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V , I_D=-20A	--	13.5	19	mΩ
		V_{GS}=-4.5V , I_D=-15A	--	19.5	25	
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS} , I_D=-250uA	-1.0	-1.5	-2.2	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-40V,V_{GS}=0V,T_J=25℃	--	--	-1	uA
		V_{DS}=-40V,V_{GS}=0V,T_J=100℃	--	--	-100	
Gate-Source Leakage Current	I_{GSS}	V_{GS} = ±20V , V_{DS}=0V	--	--	±100	nA
Forward Transconductance	g_{fs}	V_{DS}=-10V , I_D=-20A	--	44	--	S
Gate Resistance	R_g	f =1MHz	--	10	--	Ω
Total Gate Charge	Q_g	V_{DS}=-20V , V_{GS}=-10V I_D=-20A	--	35	--	nC
Gate-Source Charge	Q_{gs}		--	5.5	--	
Gate-Drain Charge	Q_{gd}		--	8	--	
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=-20V , V_{GS}=-10V R_G=3Ω ,I_D=-20A	--	14.5	--	ns
Rise Time	t_r		--	20.2	--	
Turn-Off Delay Time	$t_{d(off)}$		--	32	--	
Fall Time	t_f		--	10	--	
Input Capacitance	C_{iss}	V_{DS}=-20V , V_{GS}=0V f=1MHz	--	2525	--	pF
Output Capacitance	C_{oss}		--	190	--	
Reverse Transfer Capacitance	C_{rss}		--	172	--	

Diode Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I_S	V_G=V_D=0V , Force Current	--	--	-40	A
Diode Forward Voltage	V_{SD}	V_{GS}=0V , I_S=-1A , T_J=25℃	--	--	-1.2	V

Notes:
1. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.
2. The EAS data shows Max. rating . The test condition is V_{DD}= -25V, V_{GS}= -10V, L= 0.1mH, I_{AS}= -34A.
3. 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.
4. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
5. This value is guaranteed by design hence it is not included in the production test.

Typical Characteristics

Figure 1. Output Characteristics

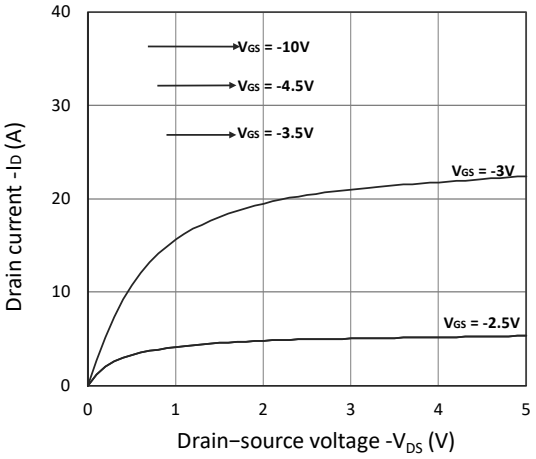


Figure 2. Transfer Characteristics

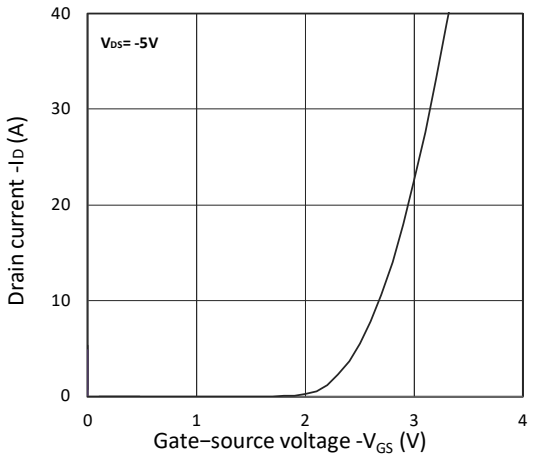


Figure 3. Forward Characteristics of Reverse

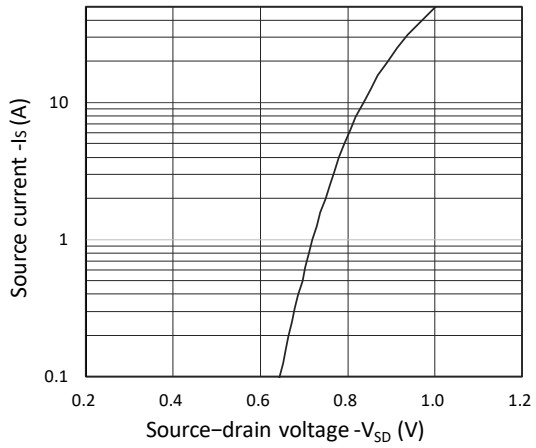


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

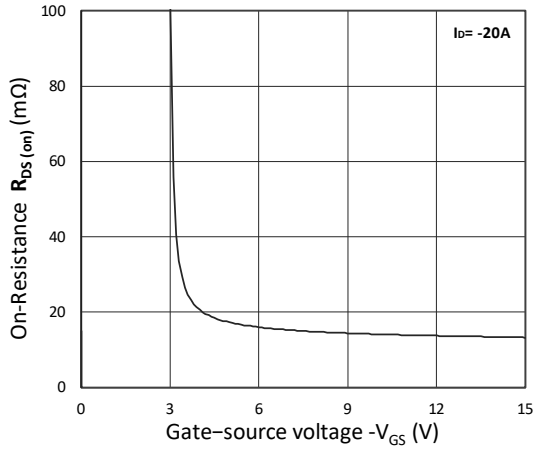


Figure 5. $R_{DS(ON)}$ vs. I_D

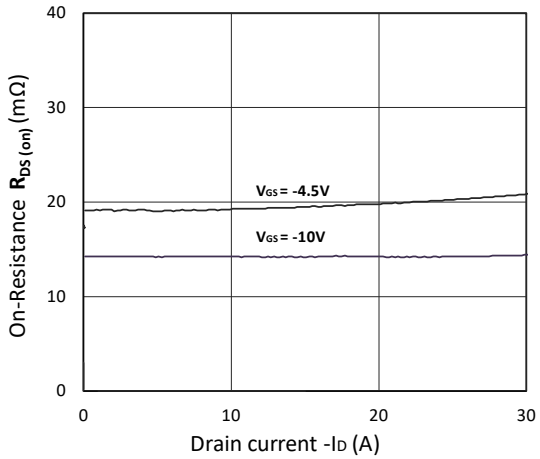


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

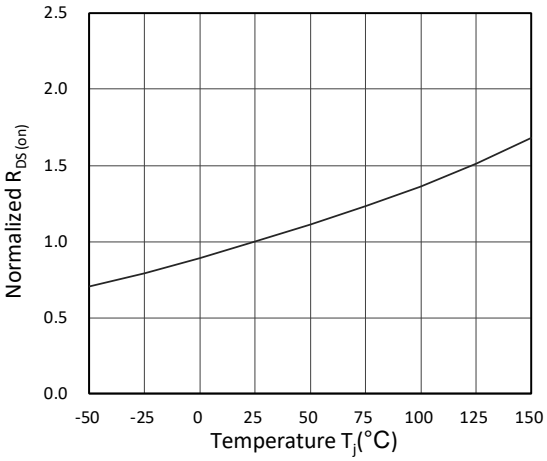


Figure 7. Capacitance Characteristics

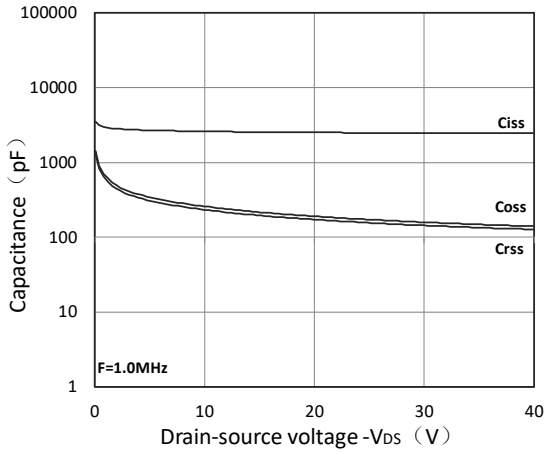


Figure 8. Gate Charge Characteristics

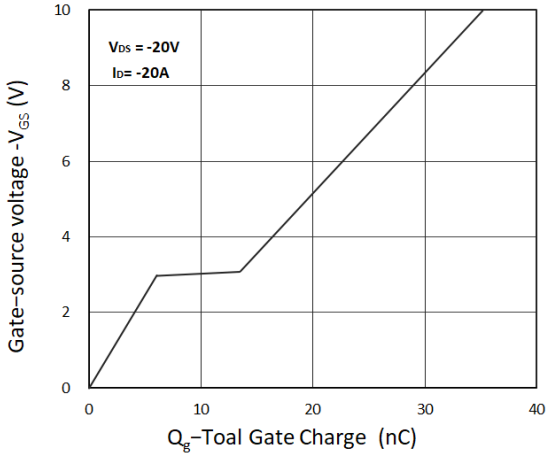


Figure 9. Power Dissipation

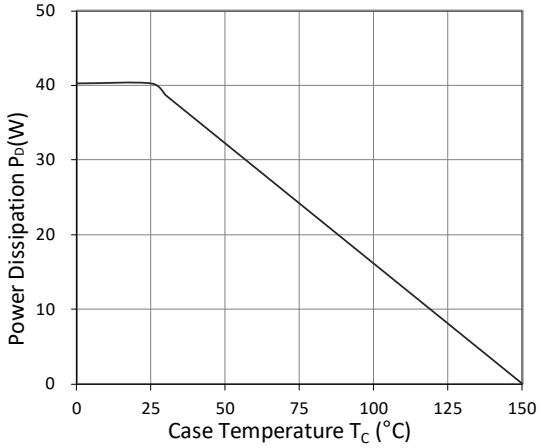


Figure10. Safe Operating Area

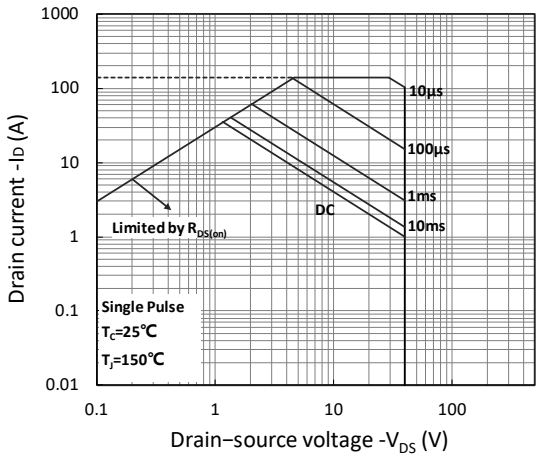
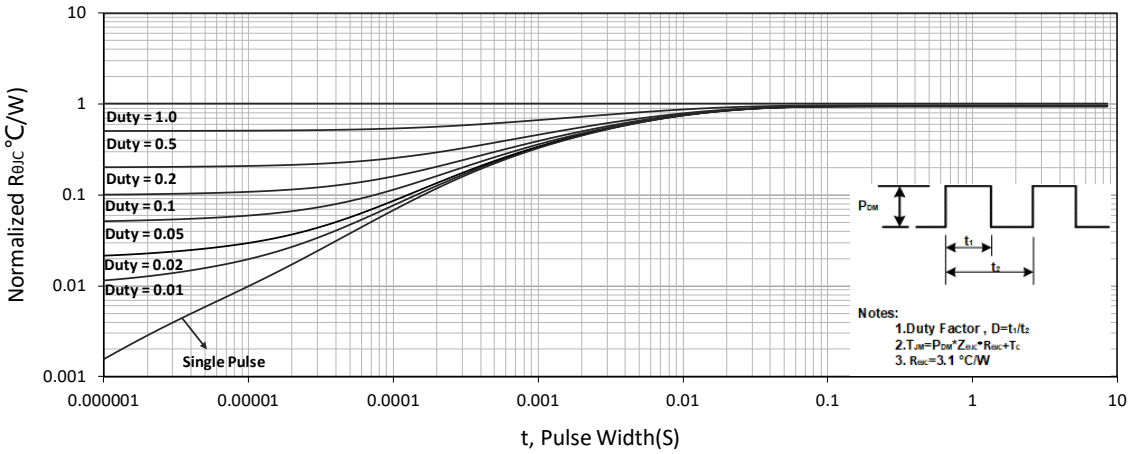
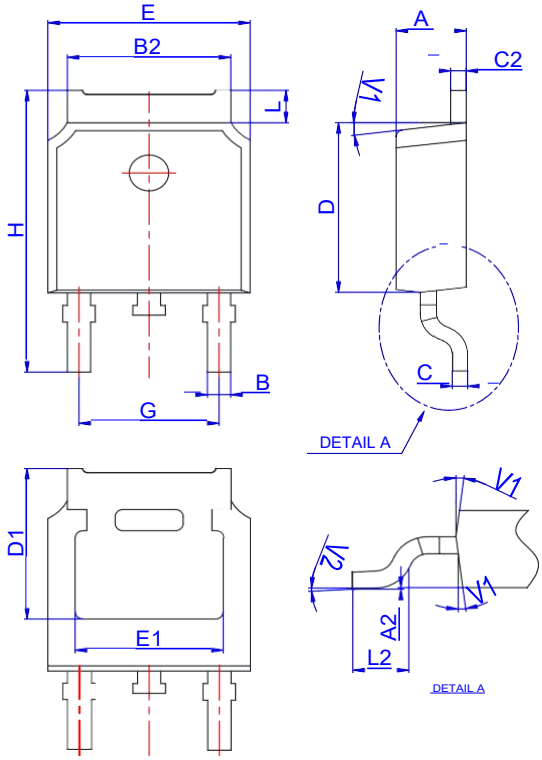


Figure 11. Normalized Maximum Transient Thermal Impedance



Package Outlines Dimensions (Units: mm)

TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

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