■ Features

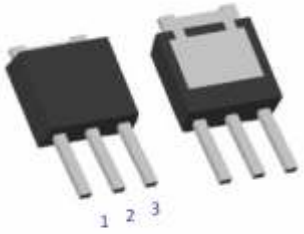
- High speed power switching
- 100% UIS tested, 100% Rg tested
- Enhanced avalanche ruggedness
- Lead free, halogen free

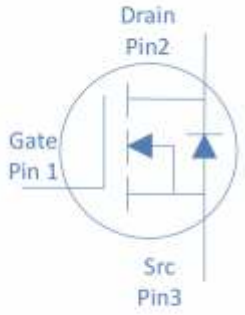
■ Application

- SMPS
- Hard switching and high speed circuit
- LED lighting
- Flyback

■ Pin Description

TO-251





■ Main product characteristics

V_{DS}	700V
$R_{DS(on),max}$	1.8Ω
I_D	2A

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■ Absolute Maximum Ratings (T_A = 25°C unless otherwise specified)

PARAMETER	CONDITIONS	Symbol	MJU02N70CT	UNIT
Continuous Drain Current	T_C = 25°C	I_D	2	A
Drain to Source Voltage		V_{DS}	700	V
Gate to Source Voltage		V_{GS}	±30	V
Pulsed Drain Current		I_{DM}	5.8	A
Avalanche energy, single pulse	L =4.0mH, T_C =25°C	E_{AS}	10	mJ
Power Dissipation	T_C = 25°C	P_D	63	W
Operating and Storage Temperature		T_J, T_{STG}	-55 to 150	°C

■ Absolute Maximum Ratings

PARAMETER	Symbol	MJU02N70CT	UNIT
Thermal Resistance Junction-case	$R_{\theta JC}$	2	°C/W
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	55	°C/W

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■ Electrical characteristics(T_J = 25°C unless otherwise specified)

■ Static Characteristics

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Drain to Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	$V_{(BR)DSS}$	700	-	-	V
Gate Threshold Voltage	V_{GS} = V_{DS}, I_D = 250μA	$V_{GS(th)}$	2	3	4	
Zero Gate Voltage Drain Current	V_{DS} = 700V, V_{GS} = 0V, T_J = 25°C	I_{DSS}	-	-	1	μA
	V_{DS} = 700V, V_{GS} = 0V, T_J = 150°C		-	10	-	
Gate to Source Leakage Current	V_{GS} = ±30V, V_{DS} = 0V	I_{GSS}	-	-	±100	nA
Drain to Source On Resistance	V_{GS} = 10V, I_{DS} = 1.0A	$R_{DS(on)}$	-	1.6	1.8	Ω
Gate Resistance	V_{GS} = 0V, V_{DS} open, f=1MHz	R_G	-	2.9	-	Ω

■ Dynamic Characteristics(note:5)

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Input Capacitance	V_{DS} = 100V, V_{GS} = 0V, F = 1MHz	C_{iss}	-	236	-	pF
Output Capacitance		C_{oss}	-	12.7	-	
Reverse Transfer Capacitance		C_{rss}	-	0.8	-	
Total Gate Charge	V_{DD} = 400V, I_D = 1.0A V_{GS}=10V	Q_g	-	4.6	-	nC
Gate to Source Charge		Q_{gs}	-	1.0	-	
Gate to Drain (Miller) Charge		Q_{gd}	-	1.4	-	
Turn on Delay Time	V_{DD} = 400, I_D = 1.0A,V_{GS}=10V R_G =25Ω	$t_{d(on)}$	-	23	-	ns
Rise Time		t_r	-	22	-	
Turn off Delay Time		$t_{d(off)}$	-	20	-	
Fall Time		t_f	-	25	-	

■ Reverse Diode Characteristics

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Diode Forward Voltage	I_F =1.0A, V_{GS} = 0V	V_{SD}	-	0.9	1.2	V
Reverse Recovery Time	V_R =300V, I_F =1.0A, dI_F/dt = 100A/μs	t_{rr}	-	400	-	ns
Reverse Recovery Charge		Q_{rr}	-	0.5	-	μC

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■ Rating and characteristics curve

Fig 1. Typical Output Characteristics

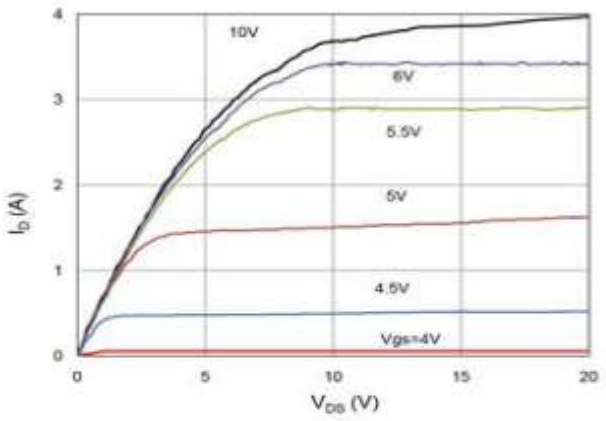


Figure 2. On-Resistance vs. Gate-Source Voltage

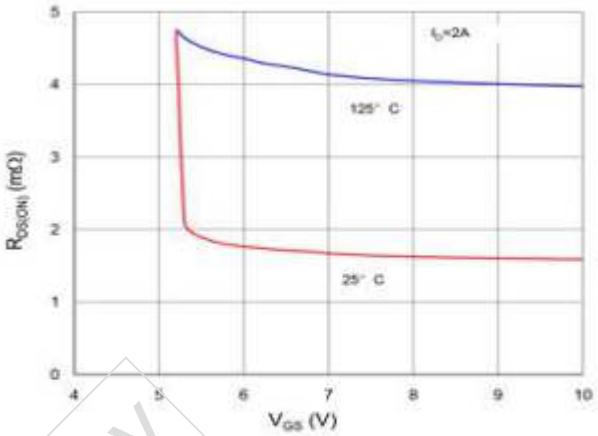


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

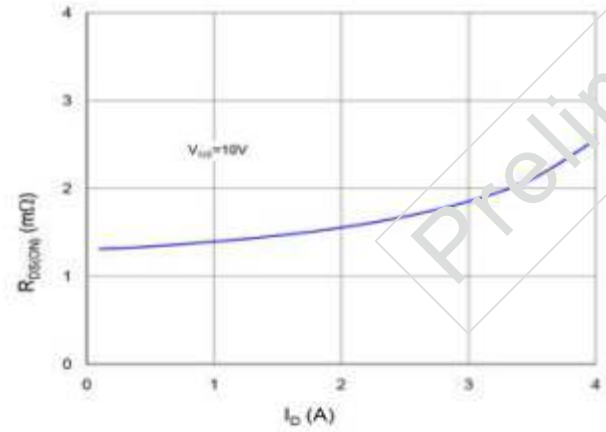


Figure 4. Normalized On-Resistance vs. Junction Temperature

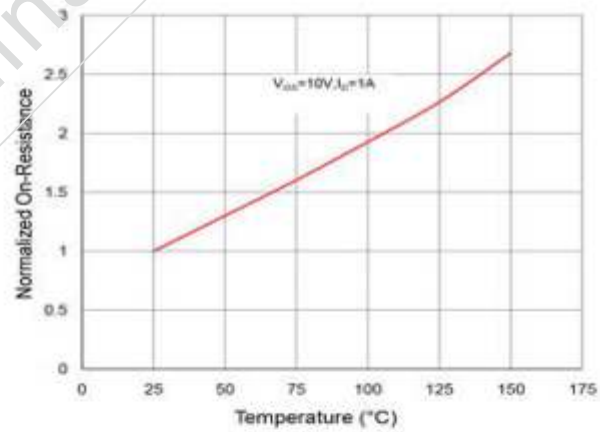


Figure 5. Typical Transfer Characteristics

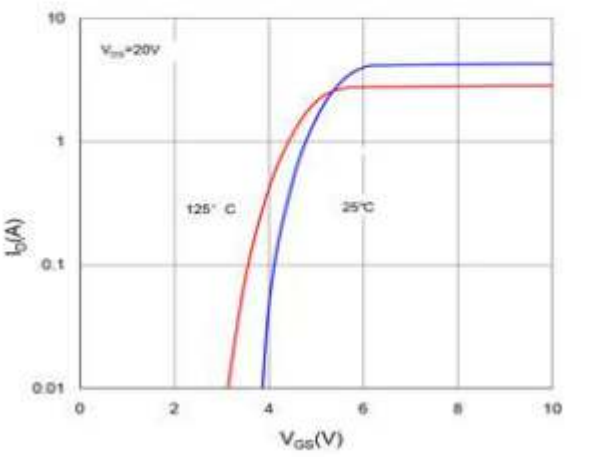
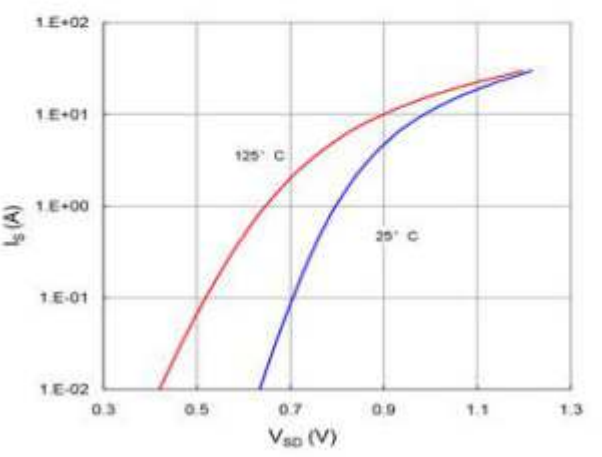


Figure 6. Typical Source-Drain Diode Forward Voltage



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■ Rating and characteristics curve

Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

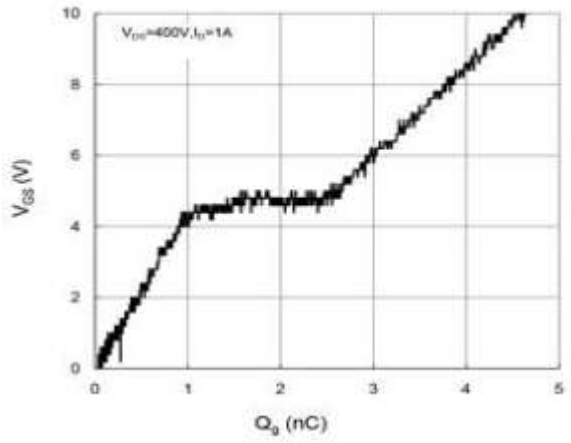


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

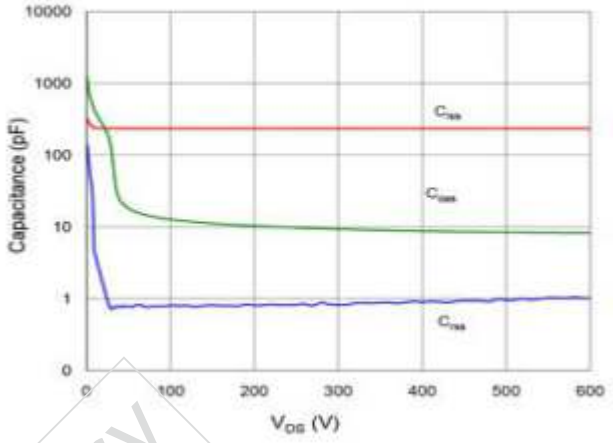


Figure 9. Maximum Safe Operating Area

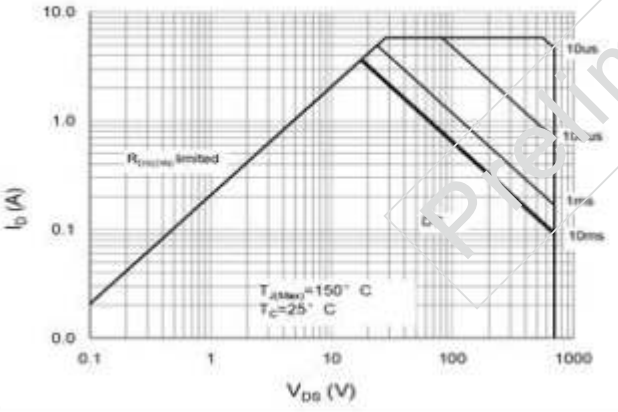


Figure 10. Maximum Drain Current vs. Case Temperature

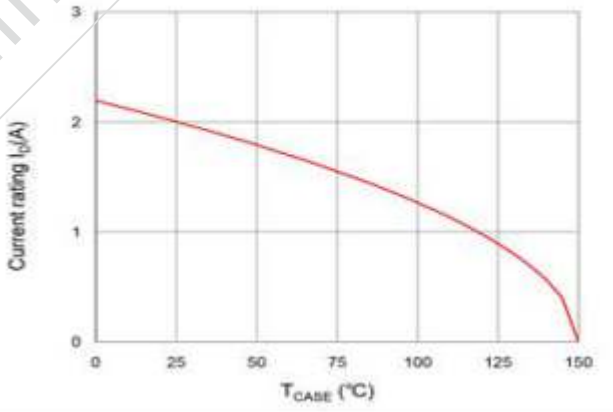
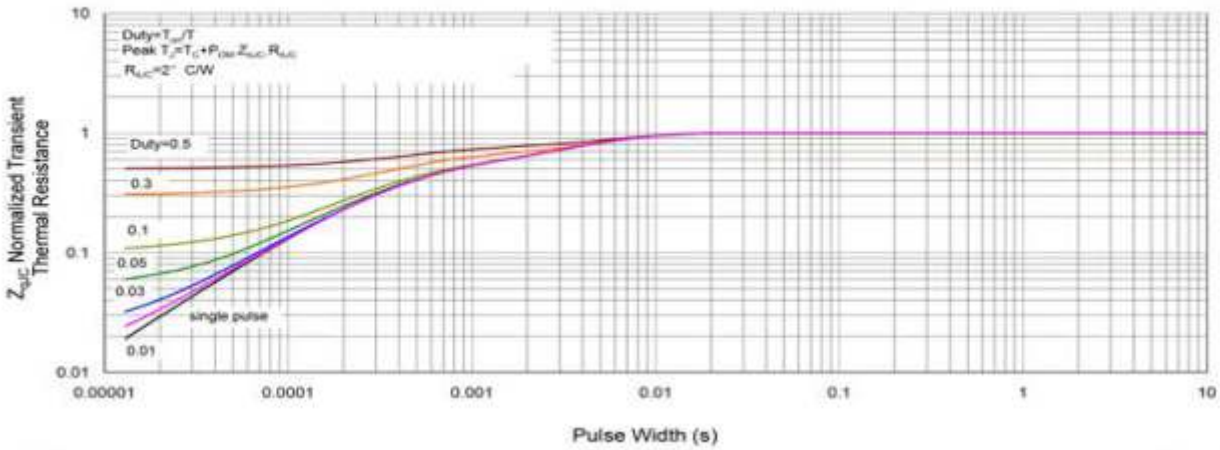


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case

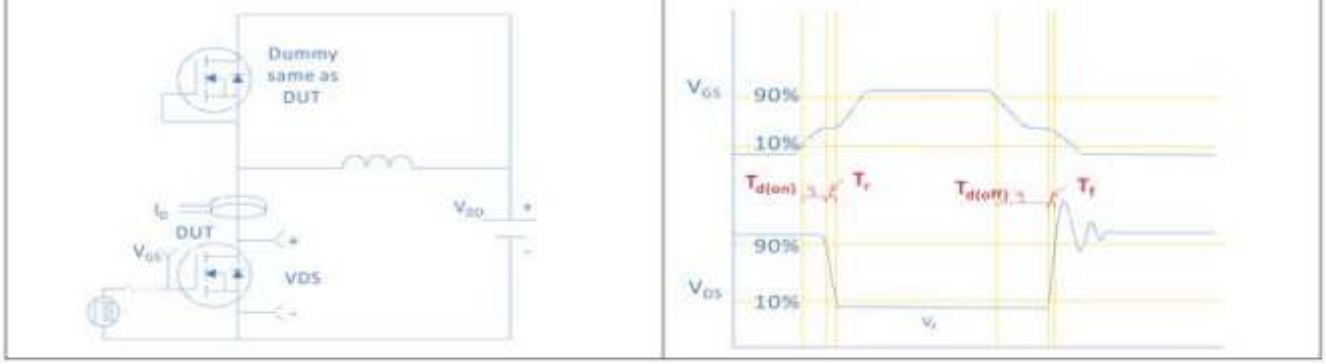


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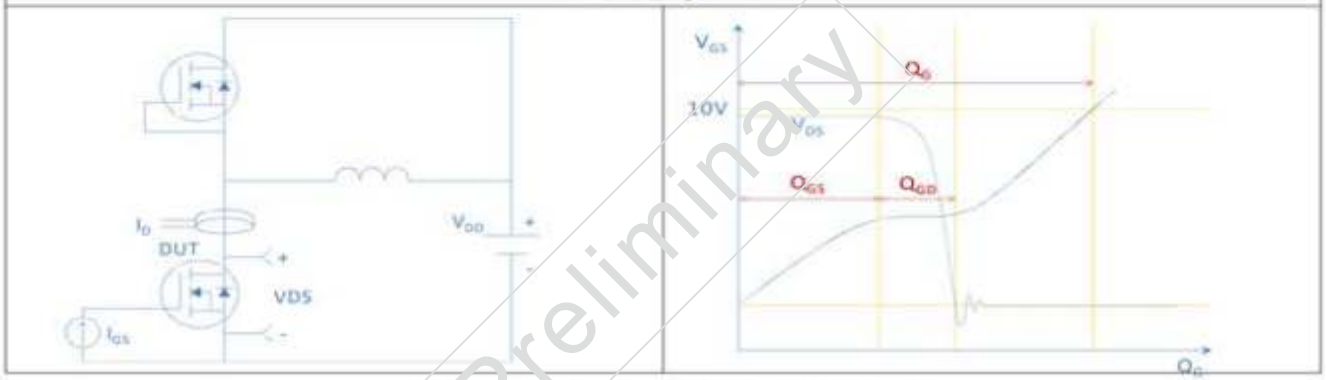
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■ Rating and characteristics curve

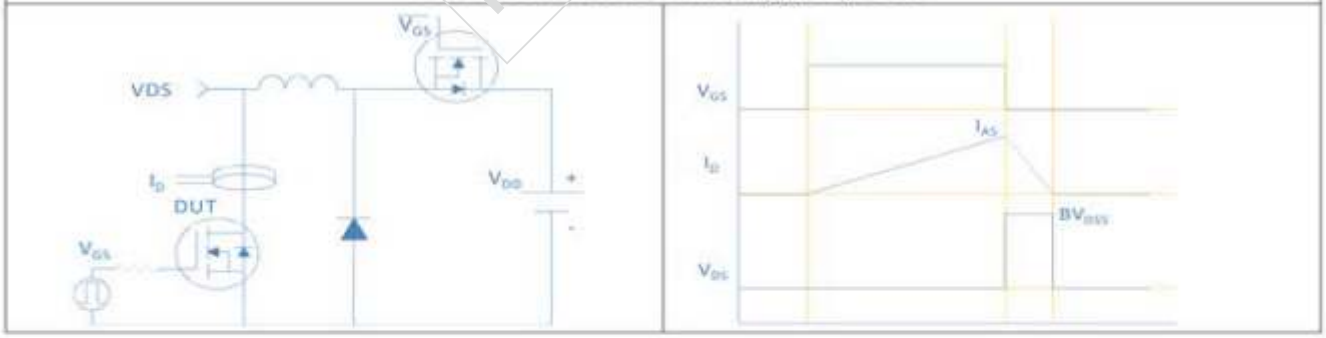
Inductive switching Test



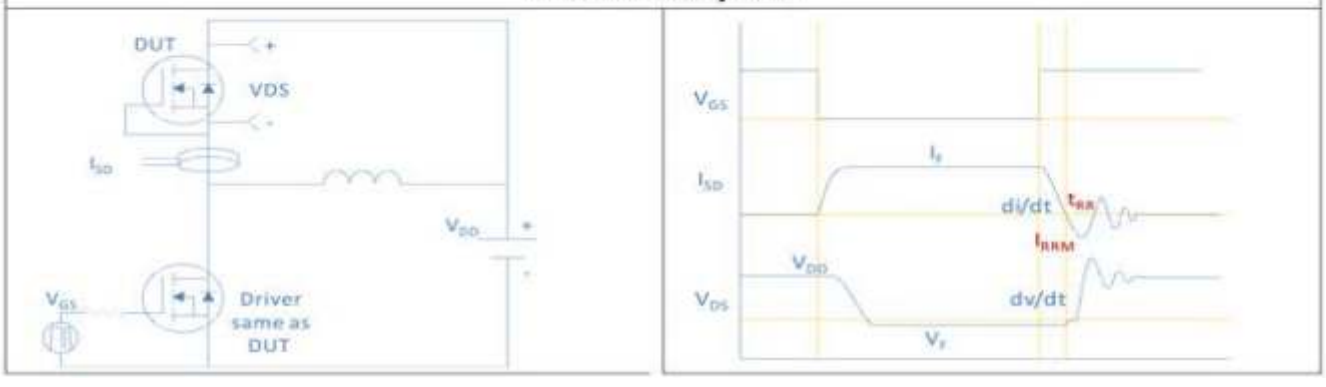
Gate Charge Test



Unclamped Inductive Switching (UIS) Test



Diode Recovery Test

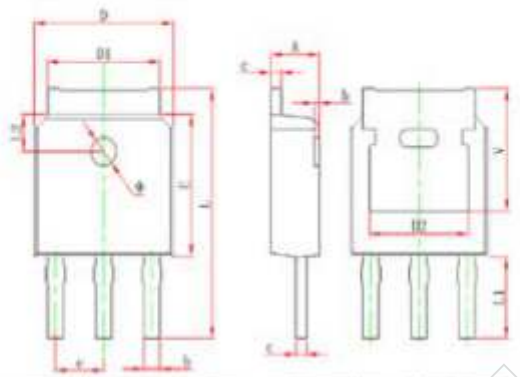


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■ Package Outline

TO-251, 3 leads



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.20	0.215
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	10.400	11.000	0.409	0.433
L1	3.500 REF.		0.138 REF.	
L2	1.600 REF.		0.063 REF.	
Φ	1.100	1.300	0.043	0.051
h	0.000	0.300	0.000	0.012
V	5.340 REF.		0.211 REF.	

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