

Features

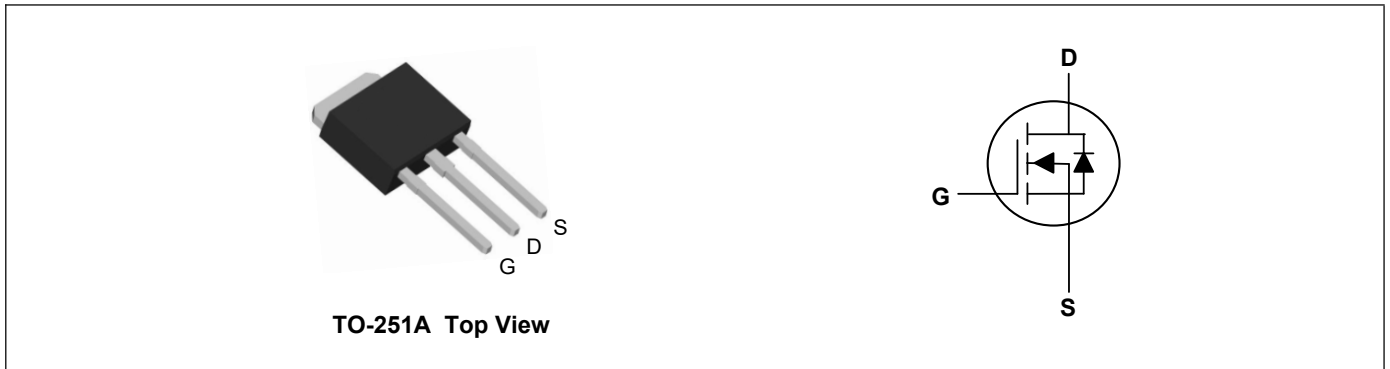
- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Green Device Available

Product Summary

V_{DS}	150	V
I_D	7	A
$R_{DS(ON)}$ (at $V_{GS}=10V$)	290	m Ω

Applications

- High Frequency Point-of-Load, Synchronous Buck Converter
- Networking DC-DC Power System
- Load Switch



Absolute Maximum Ratings($T_C=25^{\circ}C$, unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	150	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹	I_D	7	A
Pulsed Drain Current ²	I_{DM}	28	A
Total Power Dissipation ⁴	P_D	30	W
Storage Temperature Range	T_{STG}	-55 to 175	$^{\circ}C$
Operating Junction Temperature Range	T_J	-55 to 175	$^{\circ}C$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	---	5	$^{\circ}C/W$

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	150	---	---	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=7A$	---	255	290	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.5	2	2.5	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=150V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	---	---	1	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=7A$	---	3	---	S
Gate Resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	1.7	---	Ω
Total Gate Charge	Q_g	$V_{DS}=75V, V_{GS}=10V, I_D=7A$	---	17.5	---	nC
Gate-Source Charge	Q_{gs}		---	2.7	---	
Gate-Drain Charge	Q_{gd}		---	4.5	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=75V, V_{GS}=10V, R_G=6\Omega, I_D=1A$	---	8	---	ns
Rise Time	T_r		---	10	---	
Turn-Off Delay Time	$T_{d(off)}$		---	20	---	
Fall Time	T_f		---	15	---	
Input Capacitance	C_{iss}	$V_{DS}=75V, V_{GS}=0V, f=1\text{MHz}$	---	550	---	pF
Output Capacitance	C_{oss}		---	56	---	
Reverse Transfer Capacitance	C_{rss}		---	35	---	

Drain-Source Diode Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Diode Forward Voltage ²	V_{SD}	$V_{GS}=0V, I_S=7A, T_J=25^{\circ}\text{C}$	---	0.8	1.2	V

Note:

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3.The power dissipation is limited by 150 $^{\circ}\text{C}$ junction temperature

Typical Characteristics

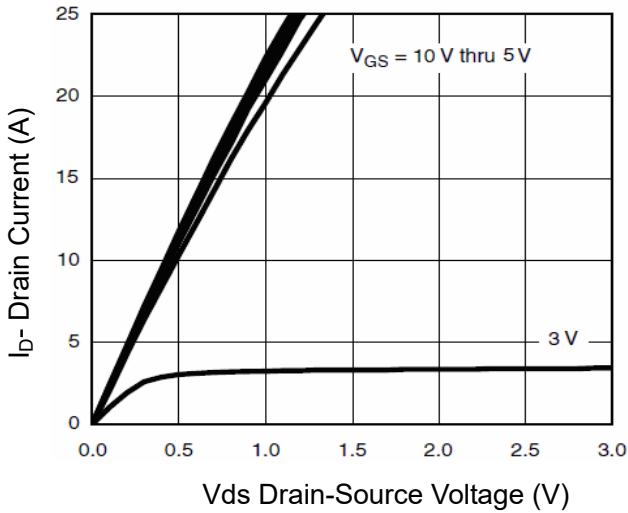


Figure 1 Output Characteristics

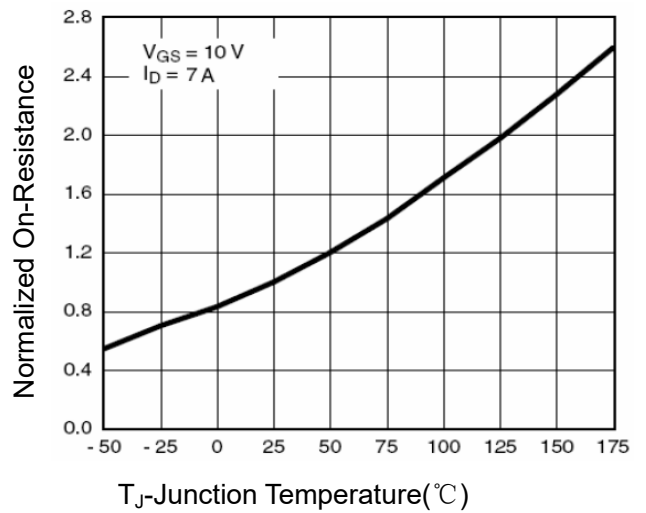


Figure 2 Rdson- Junction Temperature

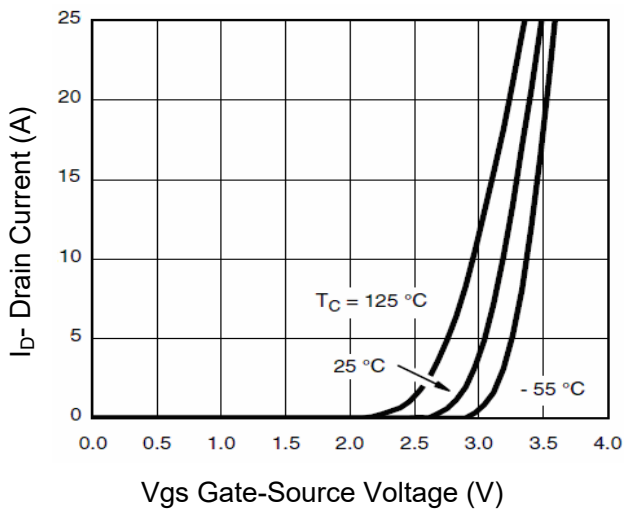


Figure 3 Transfer Characteristics

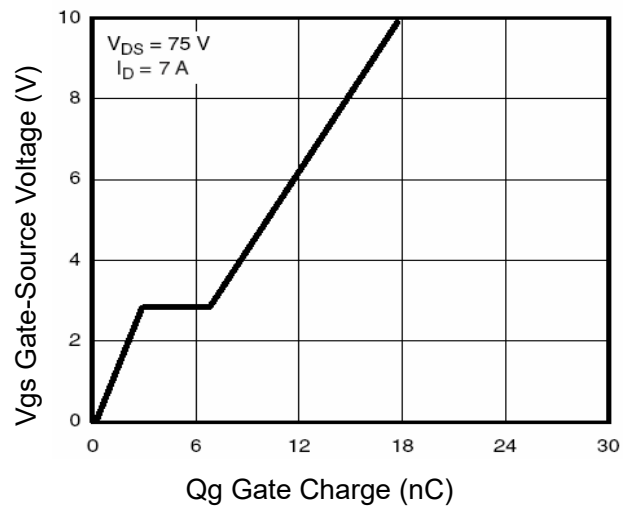


Figure 4 Gate Charge

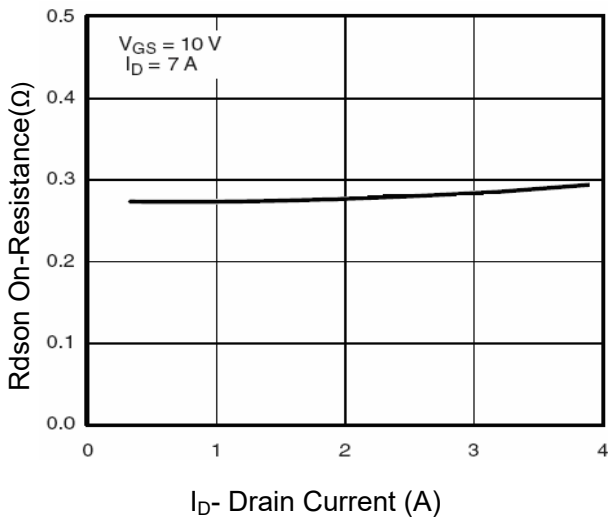


Figure 5 Rdson- Drain Current

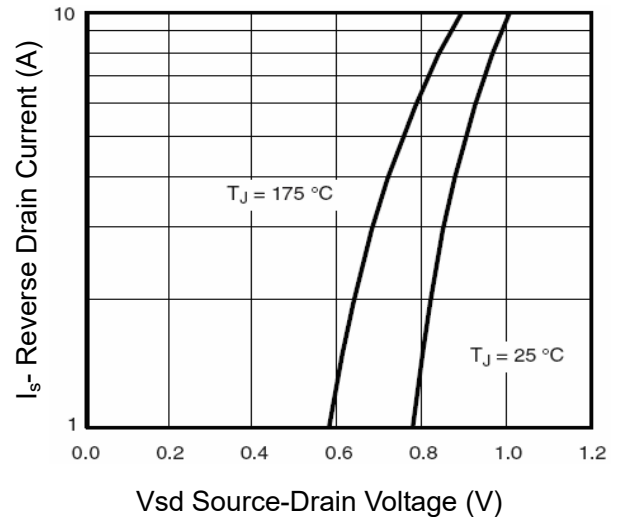


Figure 6 Source- Drain Diode Forward

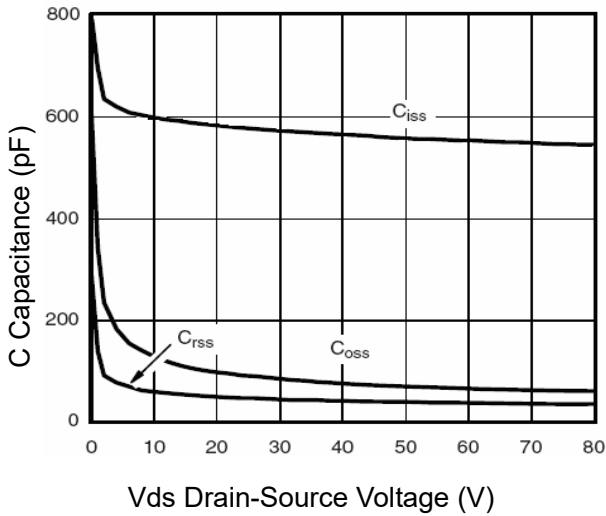


Figure 7 Capacitance vs Vds

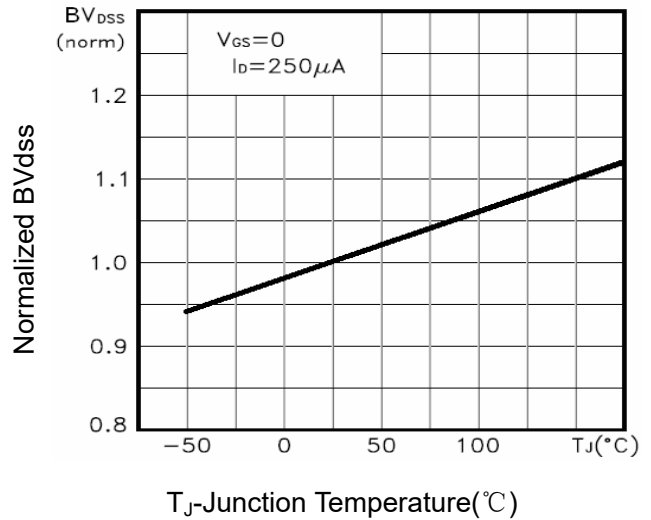


Figure 8 BV_{DSS} vs Junction Temperature

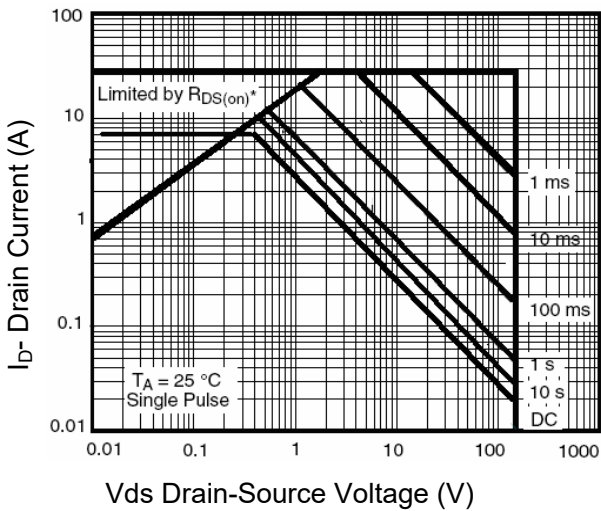


Figure 9 Safe Operation Area

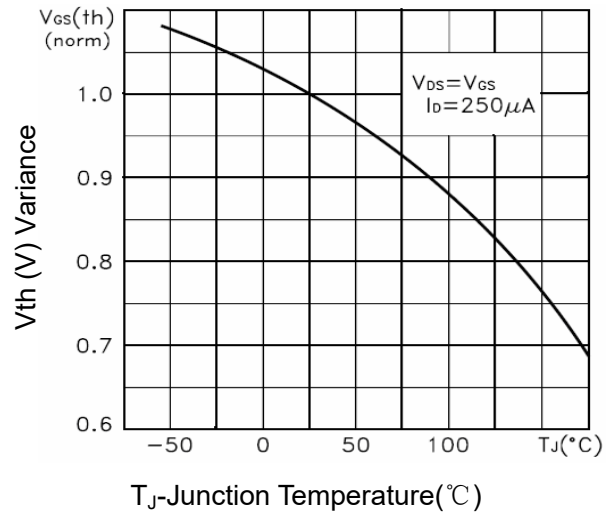


Figure 10 $V_{GS(th)}$ vs Junction Temperature

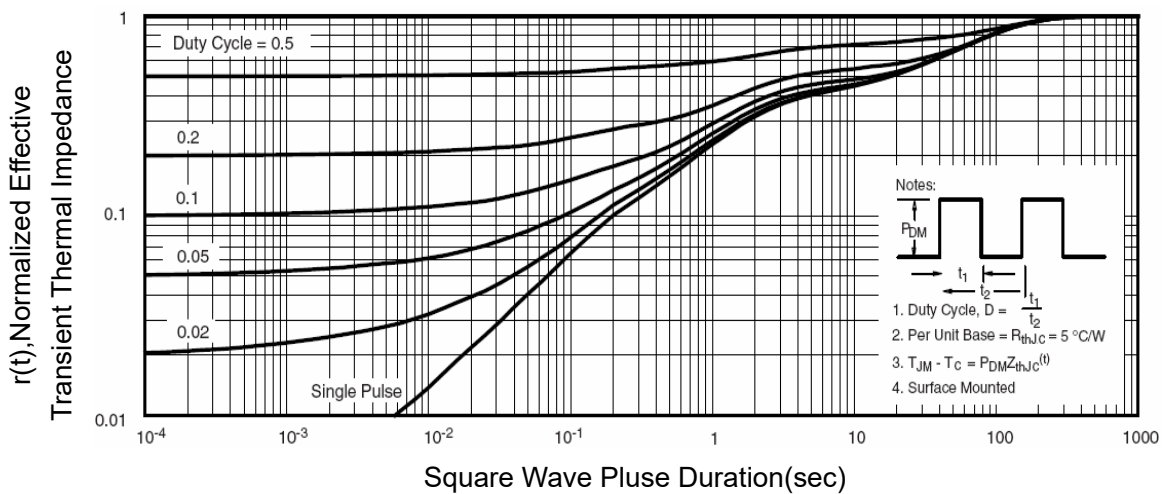
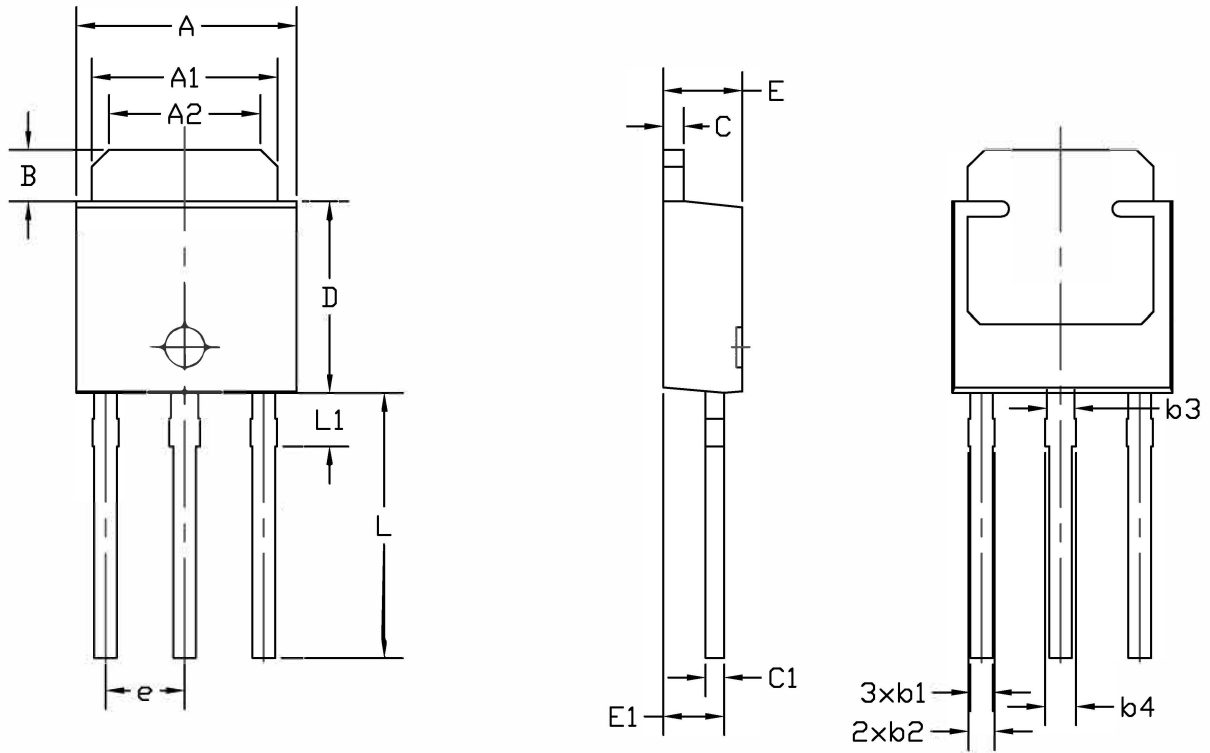


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-251A Package Outline Dimensions



Symbol	Dimensions (unit:mm)			Symbol	Dimensions (unit:mm)		
	Min	Typ	Max		Min	Typ	Max
A	6.35	6.55	6.65	C	0.45	0.55	0.65
A1	5.20	5.35	5.50	C1	0.45	0.55	0.65
A2	4.20	4.35	4.50	D	5.40	5.55	5.70
B	1.35	1.50	1.65	E	2.20	2.30	2.40
b1	0.55	0.65	0.75	e	2.30 REF		
b2	0.60	0.70	0.85	E1	1.70	1.77	1.82
b3	0.80 REF			L	7.40	7.70	8.00
b4	0.90 REF			L1	1.55 REF		