

650V 3.3Ω N-Channel Power MOSFET

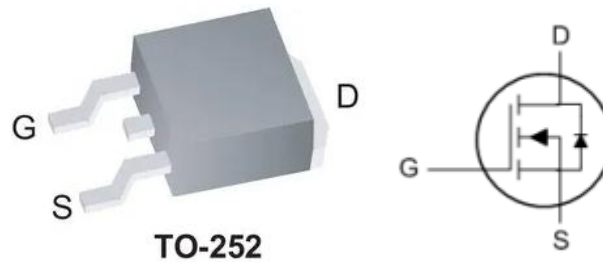
Features

- Originative New Design
- Superior Avalanche Rugged Technology
- Robust Gate Oxide Technology
- Very Low Intrinsic Capacitances
- Excellent Switching Characteristics
- Unrivalled Gate Charge : 22nC (Typ.)
- Extended Safe Operating Area

Applications

- Switching Mode Power Supply
- Motor Drive
- Charger / Power Supply / UPS
- LED Display/ Environment Lighting
- Appliances and White Goods

Pin Description



Absolute Ratings ($T_A = 25^\circ\text{C}$ in a TO-252 package unless otherwise noted)

Parameter	Symbol	Value		Units
Drain-Source Voltage	V_{DS}	+650		V
Gate-Source Voltage	V_{GS}	± 30		V
Junction Temperature Maximum	T_{JMAX}	150		$^\circ\text{C}$
Storage Temperature	$T_{Storage}$	-55 to 150		$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Value	Units
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	50	$^\circ\text{C}/\text{W}$

Electrical Characteristics

Static (T _J =25°C unless otherwise specified)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250uA	650	---	---	V
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±30V, V _{DS} = 0V	---	---	±500	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 600V, V _{GS} = 0V	---	---	1	uA
		V _{DS} = 600V, V _{GS} = 0V, T _J = 125°C	---	---	10	
Drain-Source On-State Resistance	R _{DSON}	V _{GS} = 10V, I _D = 1.5A	---	3.3	3.7	Ω
		V _{GS} = 8V, I _D = 1.5A	---	---	4.1	
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250uA	2.4	3	3.6	V
Diode Forward Voltage	V _{SD}	I _S = 7.2A, V _{GS} = 0V	---	---	1.4	V
Continuous Source Current	I _S	V _{GS} = 0V, V _{DS} Open, f=1MHz	---	---	3	A
Dynamic (T _J =25°C unless otherwise specified)						
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 400 V, f = 250kHz	---	208	---	pF
Output Capacitance	C _{oss}		---	10.8	---	
Reverse Transfer Capacitance	C _{rss}		---	3.6	---	
Total Gate Charge	Q _g	V _{DS} = 520V, I _D = 7.2A, V _{GS} = 10V	---	22	---	nC
Gate-Source Charge	Q _{gs}		---	5	---	
Gate-Drain Charge	Q _{gd}		---	9	---	
Turn-on delay time	T _{d(on)}	V _{DS} = 325V, I _D = 7.2A, R _G =25Ω	---	17	---	nS
Rise time	T _r		---	61	---	
Turn-off delay time	T _{d(off)}		---	81	---	
Fall time	T _f		---	65	---	

Typical Electrical Characteristics

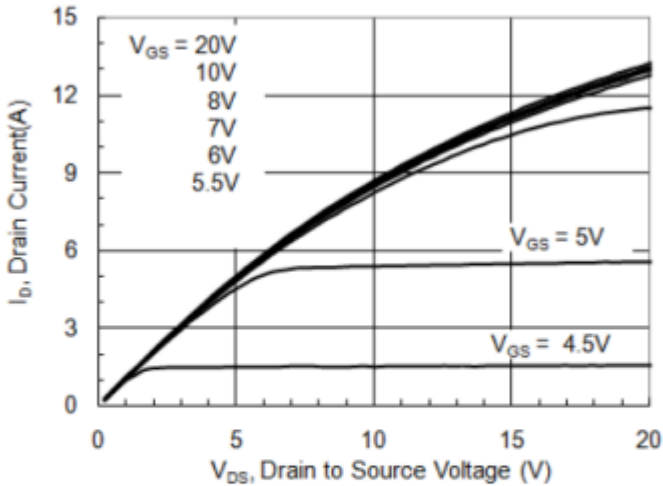


Fig1. Output characteristics

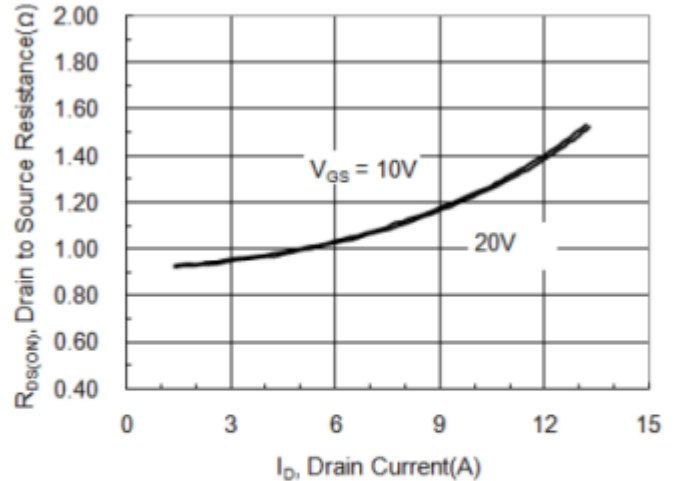


Fig2. Drain-source on-state resistance

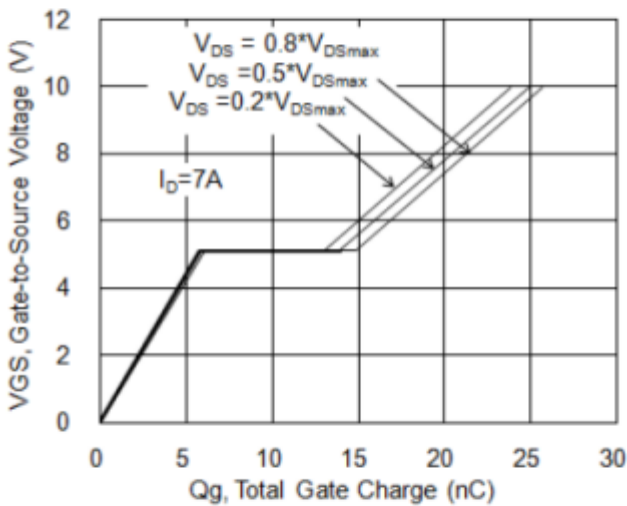


Fig3. Gate charge characteristics

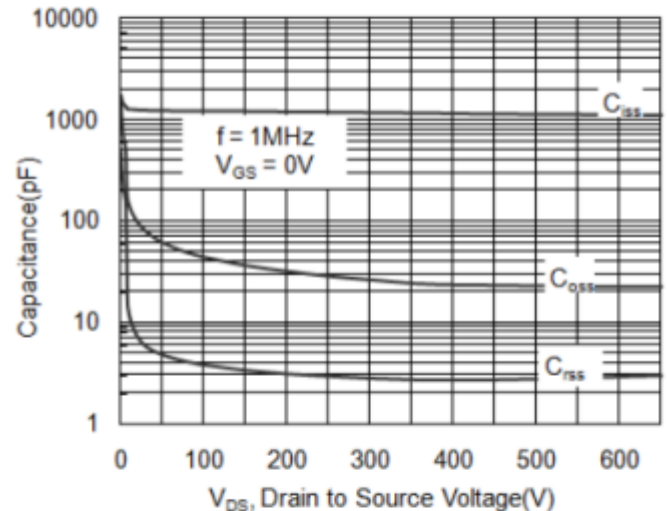


Fig4. Capacitance Characteristics

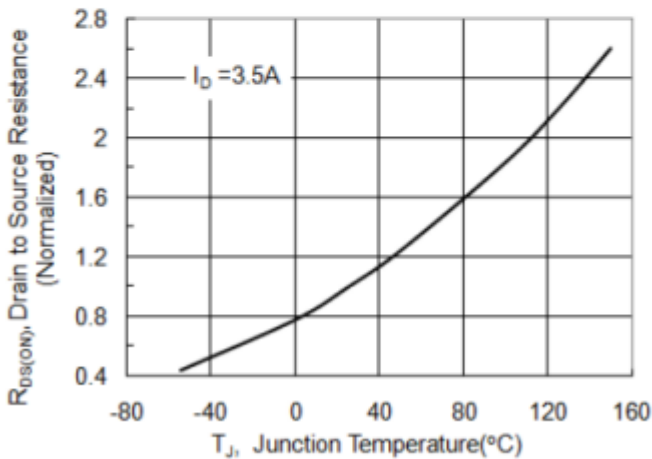


Fig5. $R_{DS(ON)}$ vs junction temperature

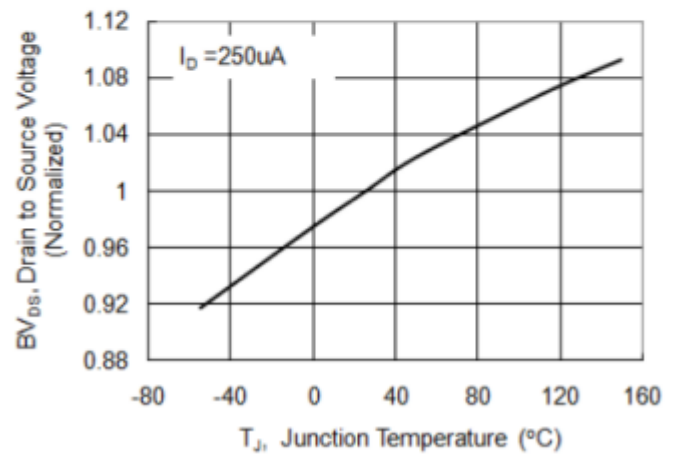


Fig6. BV_{DS} vs junction temperature

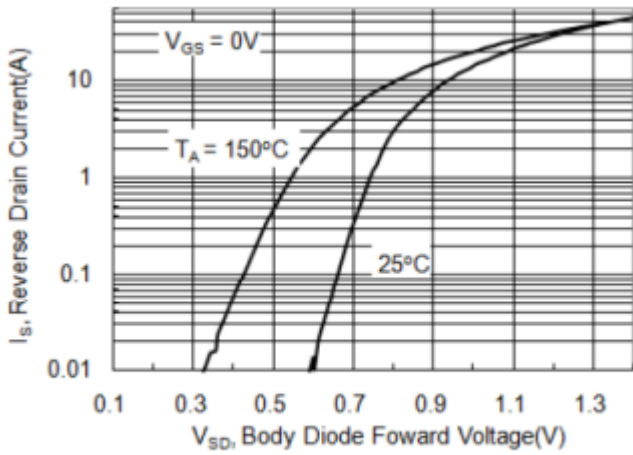


Fig 7. Forward characteristics of reverse diode

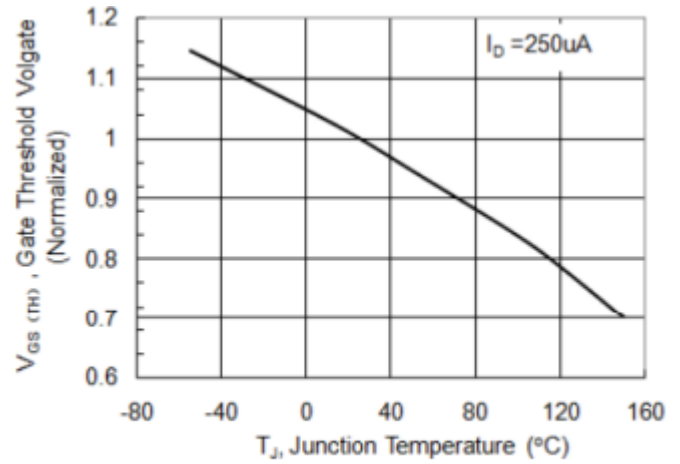


Fig 8. $V_{GS(TH)}$ vs junction temperature

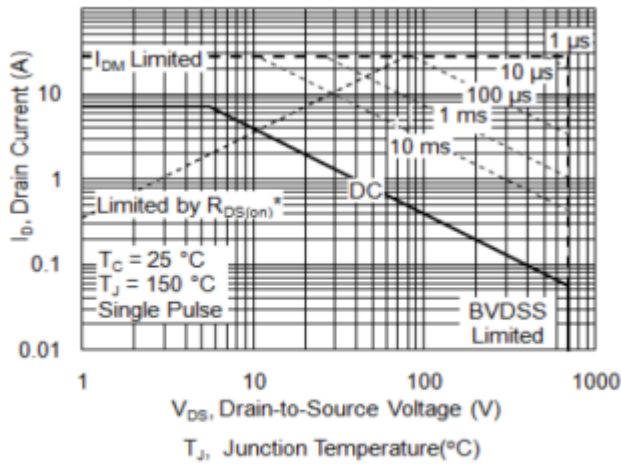
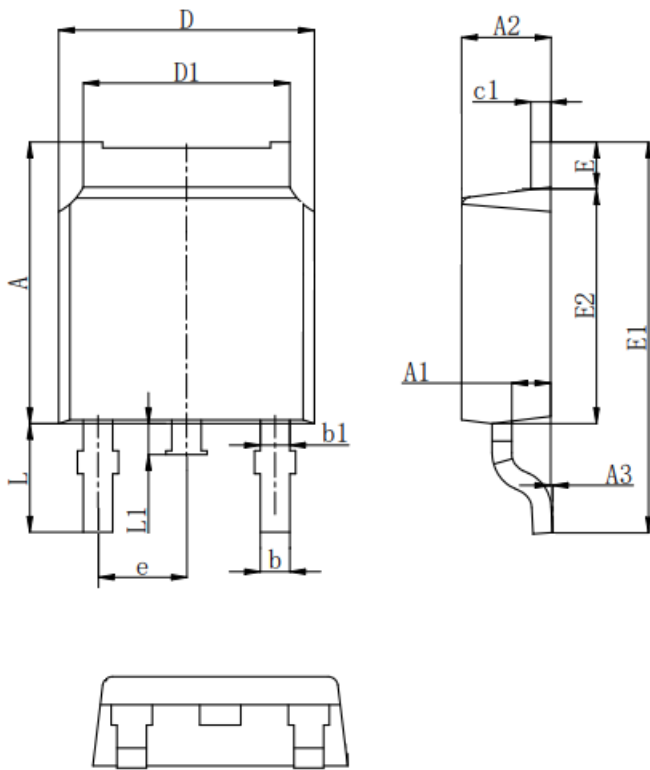


Fig 9 . Safe operating area



Dimension	A	A1	A2	A3	b	b1	c1	D	D1	E	E1	E2	e	L	L1
Min.	7.05	0.96	2.25	0				6.55	5.22	0.95	9.7	6.05		2.65	0.7
Typ.	7.1	1.01	2.3	0.05	0.76	1	0.508	6.6	5.32	1	9.9	6.1	2.286	2.8	0.8
Max.	7.15	1.06	2.35	0.1				6.65	5.42	1.05	10.1	6.15		2.95	0.9