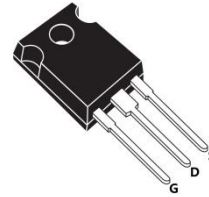


Features

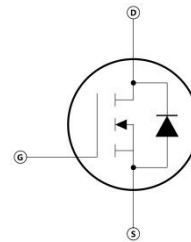
- 100% avalanche tested
- Avalanche ruggedness
- Gate charge minimized
- Very low intrinsic capacitances
- High speed switching
- Very low on-resistance



General Description

Applications

- Welder
- UPS
- PV Inverter
- Switching applications



Electrical ratings

Absolute maximum ratings			
Parameter	Symbol	Value	Unit
Drain-source voltage ($V_{GS} = 0$)	V_{DS}	1500	V
Transient Gate- source voltage	V_{GSM}	± 30	
Continuous Gate- source voltage	V_{GSS}	± 20	
Drain current (continuous) at $T_C = 25\text{ }^{\circ}\text{C}$	I_D	9	A
Drain current (continuous) at $T_C = 100\text{ }^{\circ}\text{C}$		6	
Drain current (pulsed)	I_{DM}	40	
Total dissipation at $T_C = 25\text{ }^{\circ}\text{C}$	P_{TOT}	125	W
Total dissipation at $T_C = 100\text{ }^{\circ}\text{C}$		50	W
Operating junction temperature	T_J	-55 to 150	$^{\circ}\text{C}$
Storage temperature	T_{stg}		
Maximum lead temperature for soldering purpose	T_J	300	

Thermal data			
Parameter	Symbol	Value	Unit
Thermal resistance junction-case max	$R_{thj-case}$	1	$^{\circ}\text{C}/\text{W}$
Thermal resistance junction-ambient max	$R_{thj-amb}$	50	

Avalanche characteristics			
Parameter	Symbol	Max value	Unit
Avalanche current, repetitive or not-repetitive (pulse width limited by T_J max)	I_{AR}	9	A
Single pulse avalanche energy (starting $T_J = 25\text{ }^{\circ}\text{C}$, $I_D = I_{AR}$, $V_{DD} = 50\text{ V}$)	E_{AS}	800	mJ

Electrical Characteristics ($T_{vj} = 25^{\circ}\text{C}$ unless otherwise specified)

On /off states						
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D = 1\text{ mA}$, $V_{GS} = 0$	1500			V
Zero gate voltage drain current ($V_{GS} = 0$)	I_{DSS}	$V_{DS} = \text{Max rating}$ $V_{DS} = \text{Max rating}$, $T_C = 125\text{ }^{\circ}\text{C}$			10 500	μA
Gate-body leakage current ($V_{DS} = 0$)	I_{GSS}	$V_{GS} = \pm 30\text{ V}$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\text{ }\mu\text{A}$	3	4	5	V
Static drain-source on resistance	$R_{DS(on)}$	$V_{GS} = 10\text{ V}$, $I_D = 4\text{ A}$	-	2.2	3.2	Ω

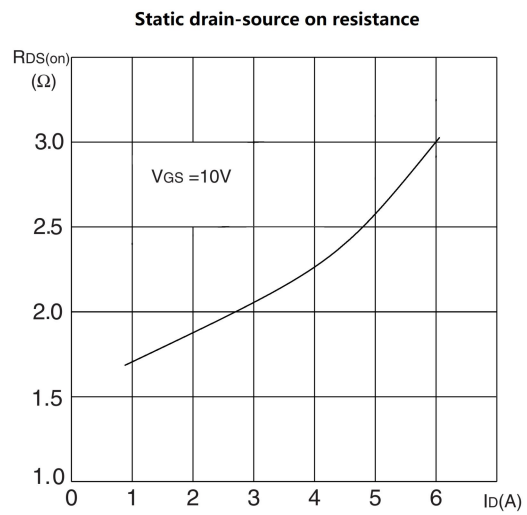
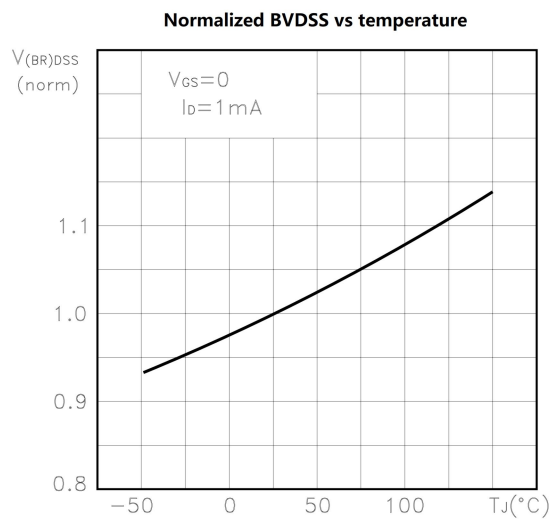
Dynamic						
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Forward transconductance	g_{fs}	$V_{DS} = 15\text{ V}$, $I_D = 4$		7		S
Input capacitance	C_{iss}	$V_{DS} = 25\text{ V}$, $f = 1\text{ MHz}$, $V_{GS} = 0$		3150		pF
Output capacitance	C_{oss}			300		
Reverse transfer capacitance	C_{rss}			25		
Total gate charge	Q_g	$V_{DD} = 1200\text{ V}$, $I_D = 9\text{ A}$ $V_{GS} = 10\text{ V}$		42		nC
Gate-source charge	Q_{gs}			14		
Gate-drain charge	Q_{gd}			48		

Switching times						
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 750\text{ V}$, $I_D = 4\text{ A}$, $R_G = 4.7\text{ }\Omega$, $V_{GS} = 10\text{ V}$		50		ns
Rise time	t_r			16		
Turn-off-delay time	$t_{d(off)}$			100		

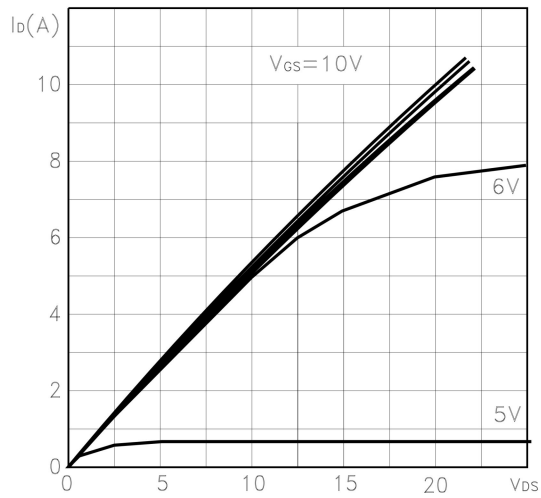
Fall time	t_f		80		
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Source drain diode						
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Source-drain current	I_{SD}			9		A
Source-drain current (pulsed)	I_{SDM}			40		
Forward on voltage	V_{SD}	$I_{SD} = 9\text{ A}$, $V_{GS} = 0$		1.5		V
Reverse recovery time	t_{rr}	$I_{SD} = 9\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$ $V_{DD} = 60\text{ V}$		950		ns
Reverse recovery charge	Q_{rr}			9		μC
Reverse recovery current	I_{RRM}			20		A
Reverse recovery time	t_{rr}	$S_D = 9\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$ $V_{DD} = 60\text{ V}$ $T_J = 150^\circ\text{C}$		900		ns
Reverse recovery charge	Q_{rr}			8.5		μC
Reverse recovery current	I_{RRM}			19		A

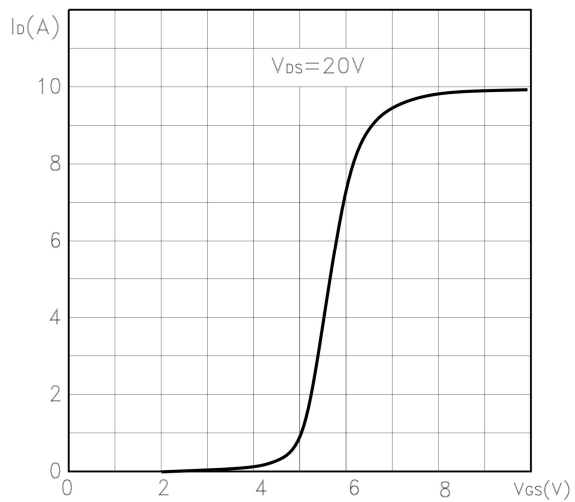
Electrical characteristics



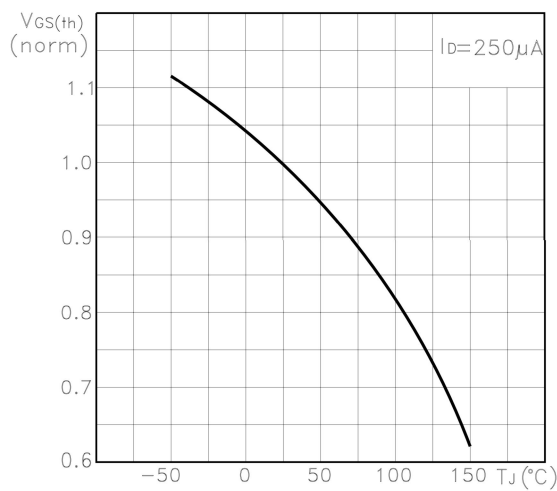
Output characteristics



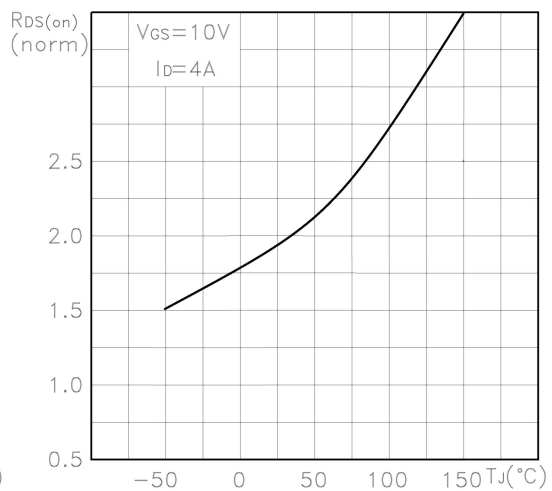
Transfer characteristics



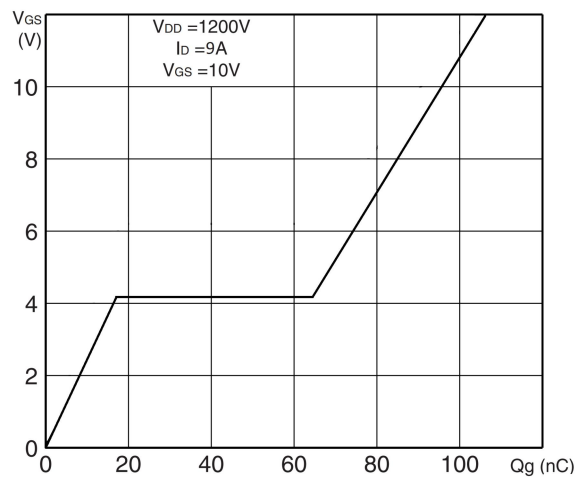
Normalized gate threshold voltage vs temperature



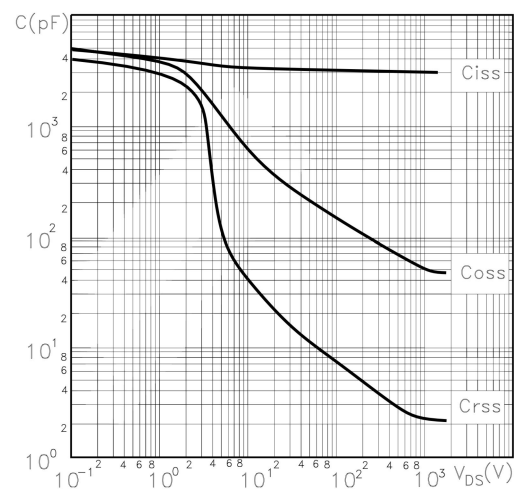
Normalized on resistance vs temperature



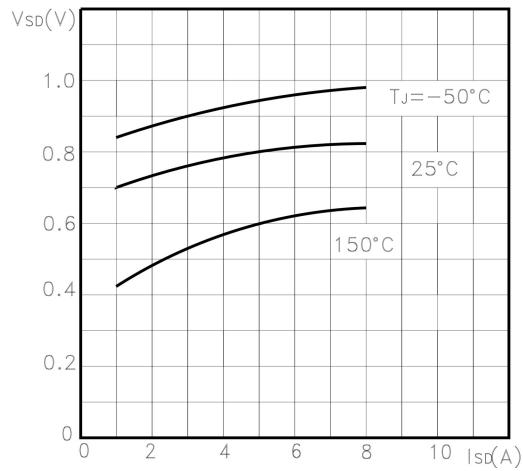
Gate charge vs gate-source voltage



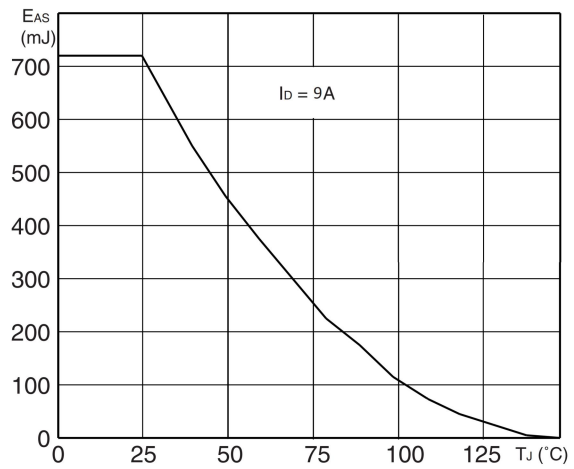
Capacitance variations



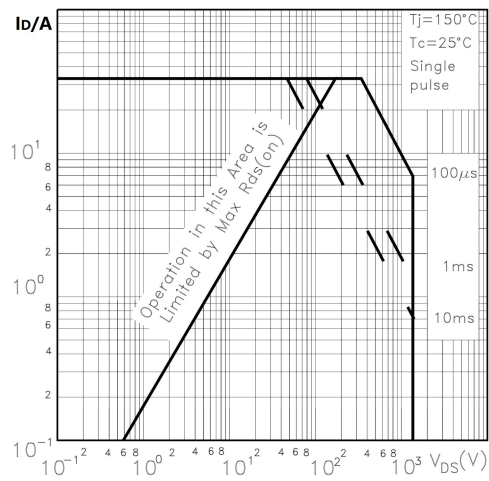
Source-drain diode forward characteristics



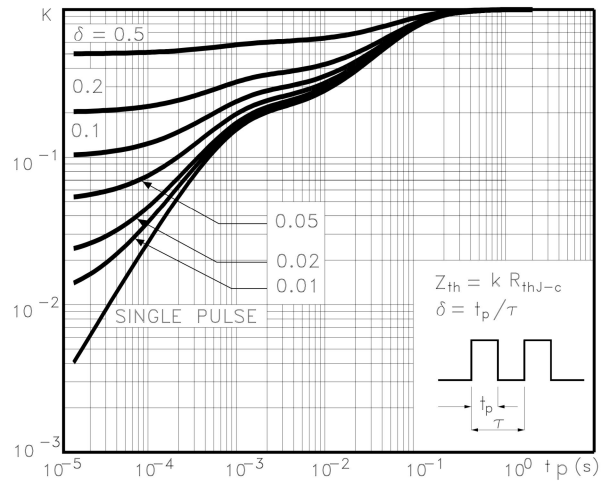
Maximum avalanche energy vs temperature



Safe operating area



Thermal impedance



Package outline dimension

