

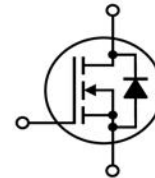
Features

- N channel plane structure
- 100% avalanche tested
- Avalanche ruggedness
- Gate charge minimized
- Very low on-resistance



Applications

- UPS
- PV Inverter
- Switching applications



Absolute maximum ratings

Parameter	Symbol	Value	Unit
Drain-source voltage ($V_{GS} = 0$)	V_{DS}	500	V
Gate- source voltage	V_{GS}	± 20	
Drain current (continuous) at $T_C = 25\text{ }^{\circ}\text{C}$	I_D	50	A
Drain current (continuous) at $T_C = 100\text{ }^{\circ}\text{C}$		28	
Drain current (pulsed)*	I_{DM}	120	
Single pulse avalanche energy (starting $T_J = 25\text{ }^{\circ}\text{C}$, $L=0.5\text{mH}$, $I_D = I_{AR}$, $V_{DD} = 50\text{ V}$)	E_{AS}	1000	mJ
Total dissipation at $T_C = 25\text{ }^{\circ}\text{C}$	P_D	595	W
Derating factor		4.76	W/ $^{\circ}\text{C}$
Operating junction temperature	T_J	-55 to 150	$^{\circ}\text{C}$
Storage temperature	T_{stg}		
Maximum lead temperature for soldering purpose	T_L	260	
Minimum Isolation voltage for terminal to case	V_{ISO}	2.4	KV

*Drain current limited by maximum junction temperature

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

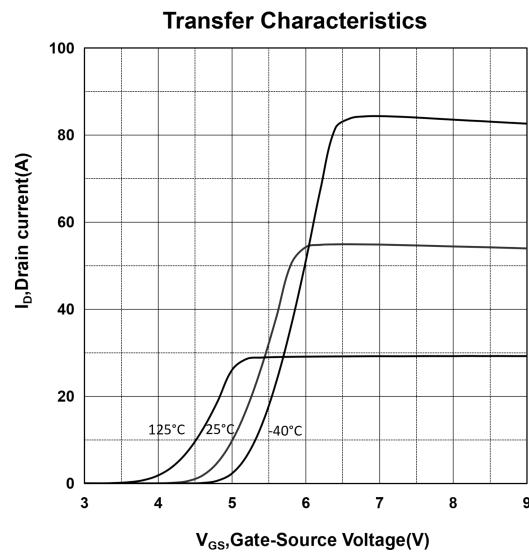
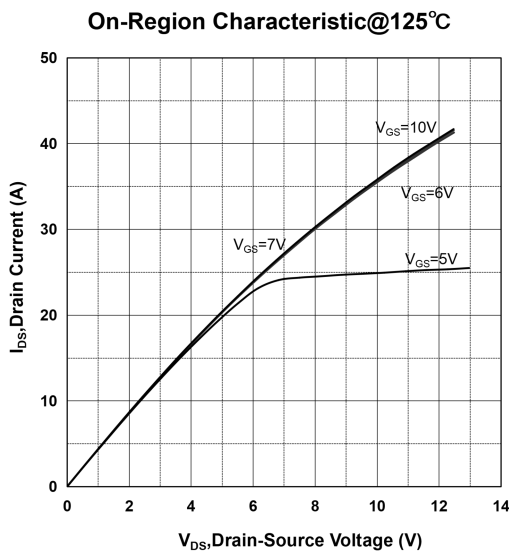
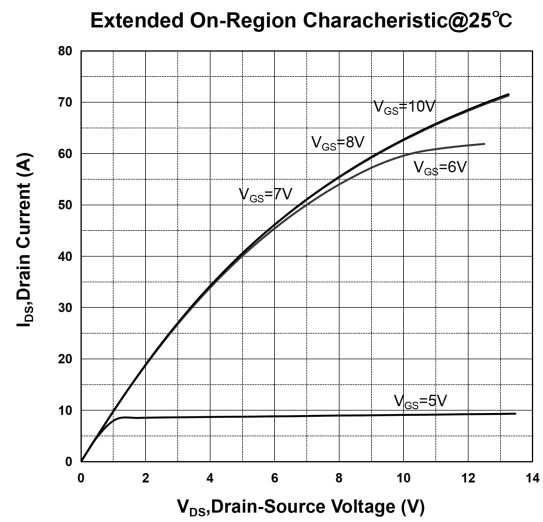
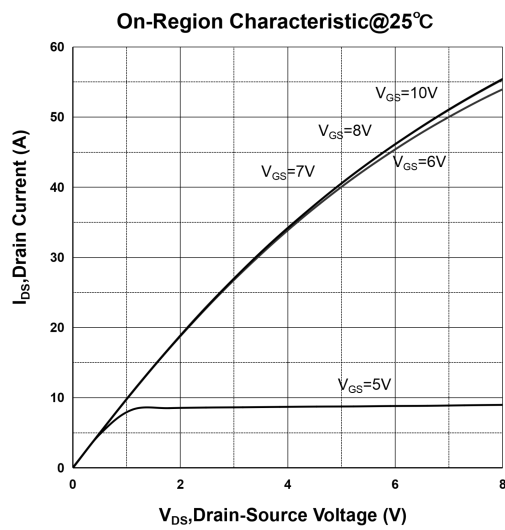
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
On /off states						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D = 1\text{ mA}$, $V_{GS} = 0$	500			V

Zero gate voltage drain current ($V_{GS} = 0$)	I_{DSS}	$V_{DS} = \text{Max rating}$ $V_{DS}=\text{Max rating, } T_C=125\text{ }^{\circ}\text{C}$				1	μA
Gate-body leakage current ($V_{DS} = 0$)	I_{GSS}	$V_{GS} = \pm 20\text{ V}$				± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$		2.8	3.8	5.2	V
Static drain-source on resistance	$R_{DS(on)}$	$V_{GS} = 10\text{V},$ $I_D = 22\text{A}$	$T_C=25^{\circ}\text{C}$		113	152	m Ω
			$T_C=150^{\circ}\text{C}$		265		
Forward transconductance	G_{fs}	$V_{DS}=20\text{V}, I_D=25\text{A}$			48		S
Dynamic							
Input capacitance Output capacitance Reverse transfer capacitance	C_{iss}	$V_{DS}=25\text{V}, f=1\text{MHz}, V_{GS}=0$			3731		pF
	C_{oss}				972		
	C_{rss}				669		
Gate input resistance	R_g	$f=1\text{MHz}$ Gate DC Bias=0 Test signal level=20mV open drain			2.5		Ω
Total gate charge Gate-source charge Gate-drain charge	Q_g	$V_{DD}=400\text{V}, I_D=20\text{A}$ $V_{GS}=10\text{V}$			105		nC
	Q_{gs}				28		
	Q_{gd}				45		
Gate plateau voltage	V_P				6		V
Switching times							
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 400\text{ V}, I_D = 20\text{A},$ $R_G = 10\Omega, V_{GS} = 10\text{ V}$			31		ns
Rise time	t_r				43		
Turn-off-delay time	$t_{d(off)}$				150		
Source drain diode							
Forward on voltage	V_{SD}	$I_{SD}= 44\text{ A}, V_{GS}= 0\text{V}$			1.0	1.3	V
Reverse recovery time	t_{rr}	$I_{SD}= 20\text{A}, di/dt= 100\text{A}/\mu\text{s}$ $V_{DD}= 60\text{ V}$			198		nS
Reverse recovery charge	Q_{rr}				3.2		μC
Reverse recovery current	I_{RRM}				15		A

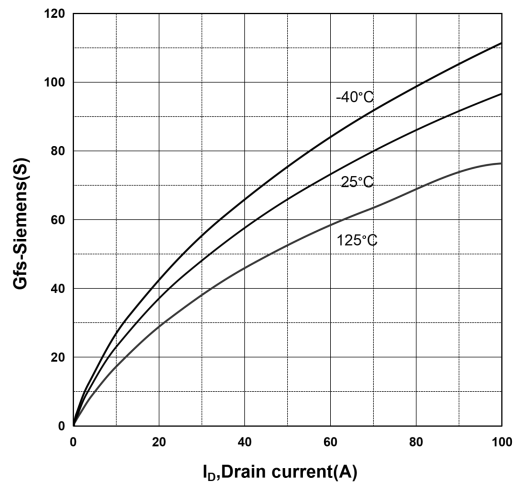
Thermal data

Parameter	Symbol	Value	Unit
Thermal resistance junction-case max	$R_{thj-case}$	0.21	°C/W
Thermal resistance junction-ambient max	$R_{thj-amb}$	40	

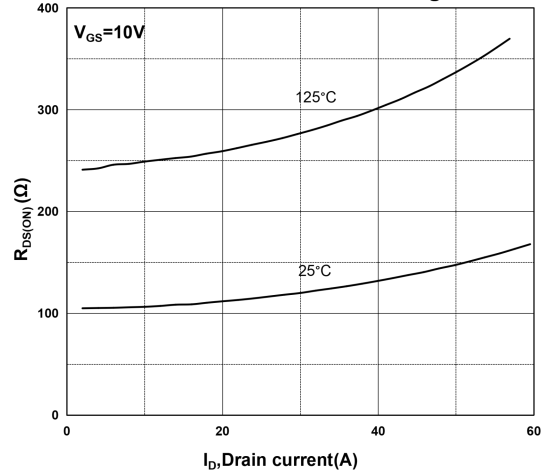
Electrical characteristics



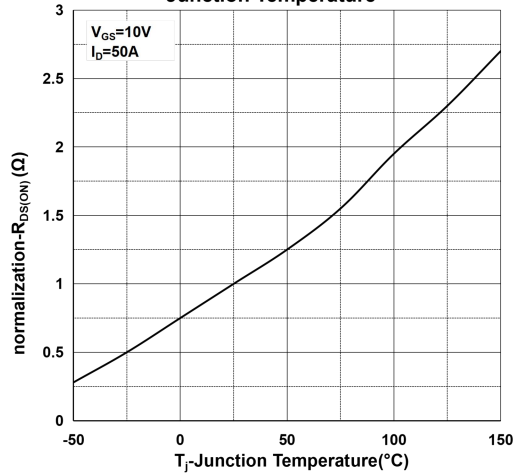
Transconductance



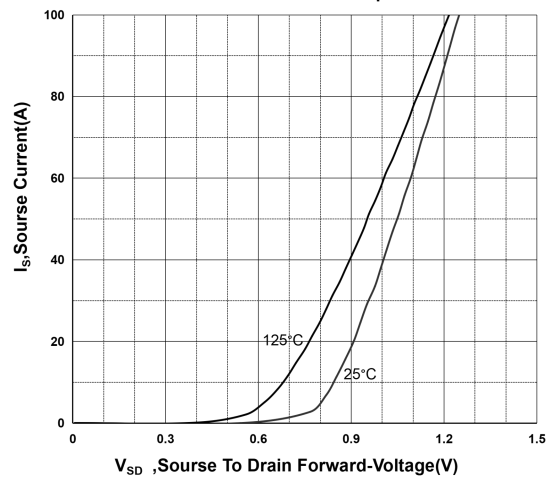
On-Resistance Variation vs Drain Current and Gate Voltage



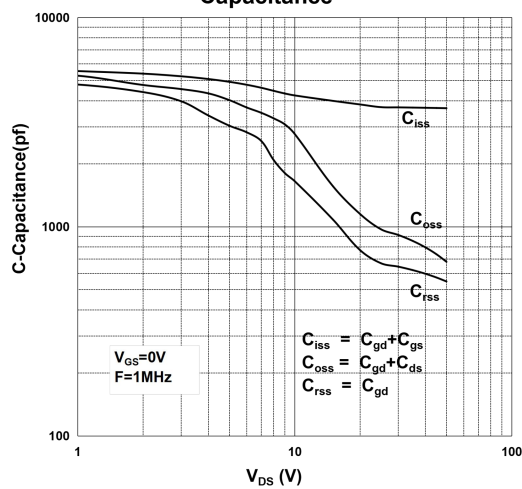
Normalization On-Resistance Variation vs Junction Temperature



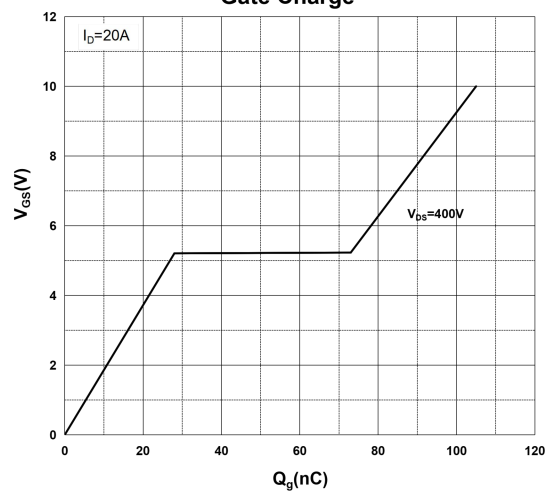
Body Diode Forward Voltage Variation with Source Current and Temperature



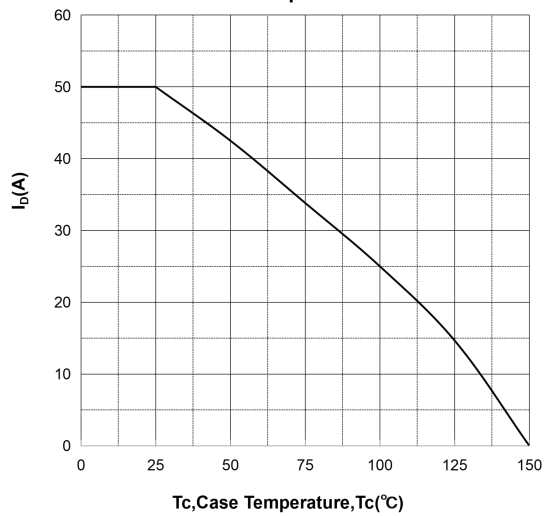
Capacitance



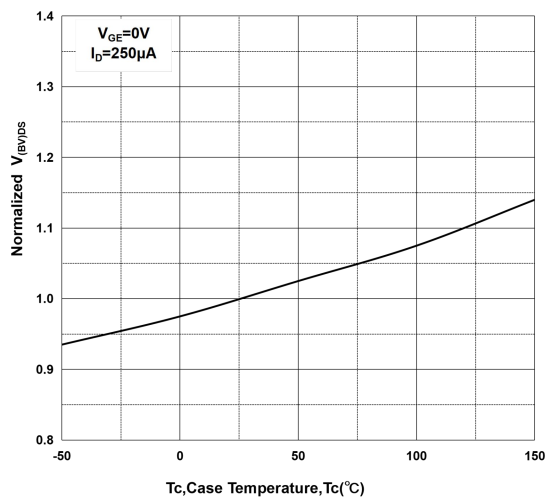
Gate Charge



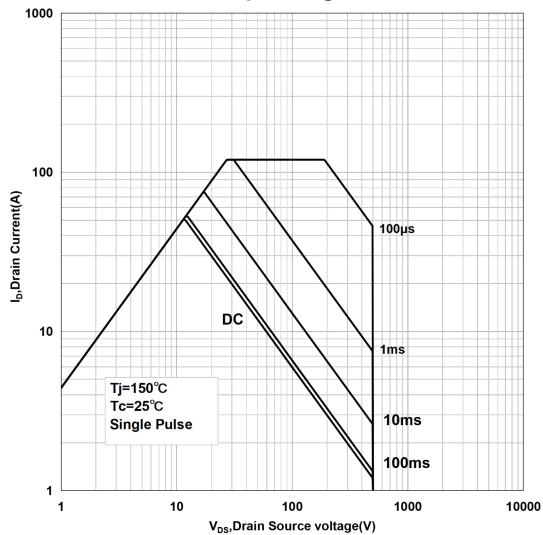
Maximum Drain Current vs Case Temperature



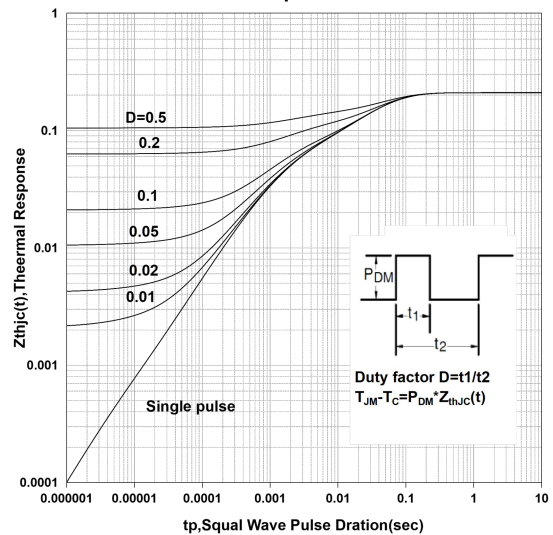
Normalized $V_{(BV)DS}$ vs temperature



Safe Operating Area



Transient response Curve



Package outline dimension

