

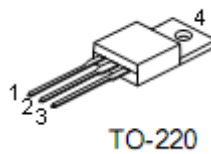
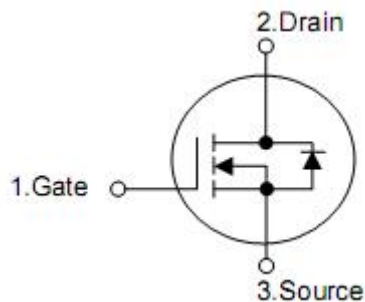
1. Features

- n $R_{DS(on)}=2.3m\Omega$ (typ) @ $V_{GS}=10V$
- n 100% avalanche tested
- n Reliable and rugged
- n Lead free and green device available (RoHS Compliant)

2. Applications

- n Switching application
- n Power management for inverter systems

3. Symbol



Pin	Function
1	Gate
2	Drain
3	Source
4	Drain

4. Absolute maximum ratings

Parameter		Symbol	Rating	Units
Drain-source voltage		V_{DSS}	40	V
Gate-source voltage		V_{GSS}	± 20	V
Maximum junction temperature		T_J	175	$^{\circ}\text{C}$
Storage temperature range		T_{STG}	-55 to 175	$^{\circ}\text{C}$
Diode continuous forward current	$T_C=25^{\circ}\text{C}$	I_S	250	A
Continuous drain current	$T_C=25^{\circ}\text{C}$	I_D	250	A
	$T_C=100^{\circ}\text{C}$		162	A
Pulse drain current*	$T_C=25^{\circ}\text{C}$	I_{DM}	805**	A
Avalanche energy, single pulsed	$L=0.3\text{mH}$	E_{AS}	1.5***	J
Maximum power dissipation	$T_C=25^{\circ}\text{C}$	P_D	288	W
	$T_C=100^{\circ}\text{C}$		144	W

Note:* Repetitive rating;pulse width limited by junction temperature

** Drain current is limited by junction temperature

*** $V_D=32\text{V}$.

5. Thermal characteristics

Parameter	Symbol	Rating	Unit
Thermal resistance,Junction-ambient	$R_{\theta JA}$	62.5	$^{\circ}\text{C}/\text{W}$
Thermal resistance,Junction-case	$R_{\theta JC}$	0.52	$^{\circ}\text{C}/\text{W}$

6. Electrical characteristics

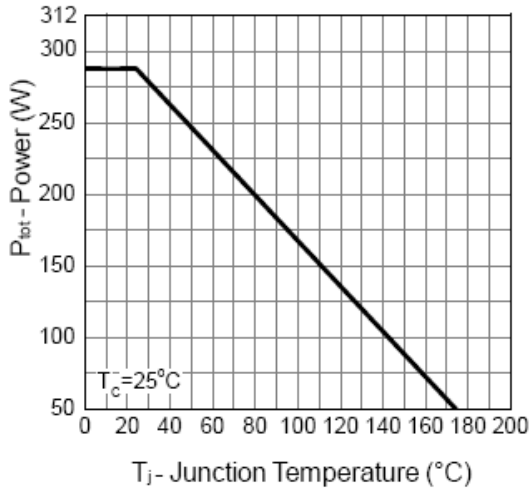
($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Drain-source breakdown voltage	BV_{DSS}	$V_{GS}=0V, I_{DS}=250\mu A$	40	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=40V, V_{GS}=0V$	-	-	1	μA
		$T_J=85^{\circ}\text{C}$	-	-	10	
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	3.0	4.0	V
Gate leakage current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA
Drain-source on-state resistance	$R_{DS(on)^*}$	$V_{GS}=10V, I_D=125A$	-	2.3	3.0	m Ω
Gate resistance	R_g	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	-	1.0	-	Ω
Diode forward voltage	V_{SD}	$I_{SD}=125A, V_{GS}=0V$	-	0.8	1.2	V
Reverse recovery time	t_{rr}	$I_{SD}=125A,$ $di_{SD}/dt=100A/\mu s$	-	38	-	nS
Reverse recovery charge	Q_{rr}		-	62	-	nC
Input capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V,$ $f=1\text{MHz}$	-	6985	-	pF
Output capacitance	C_{oss}		-	1863	-	
Reverse transfer capacitance	C_{rss}		-	682	-	
Turn-on delay time	$t_{d(on)}$	$V_{DD}=20V, I_{DS}=125A,$ $R_G=6\Omega, V_{GS}=10V$	-	35	-	ns
Rise time	t_r		-	20	-	
Turn-off delay time	$t_{d(off)}$		-	45	-	
Fall time	t_f		-	62	-	
Total gate charge	Q_g	$V_{DS}=32V, V_{GS}=10V$ $I_{DS}=125A$	-	195	-	nC
Gate-source charge	Q_{gs}		-	30	--	
Gate-drain charge	Q_{gd}		-	80	--	

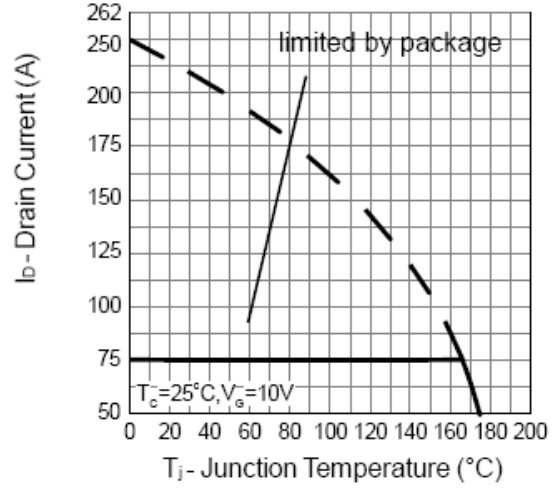
Note*: Pulse test; pulse width $\leq 300\mu s$ duty cycle $\leq 2\%$.

7. Test circuits and waveforms

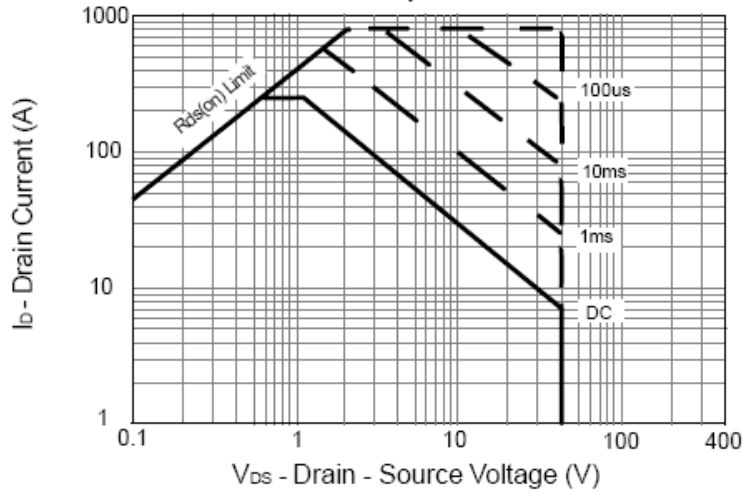
Power Dissipation



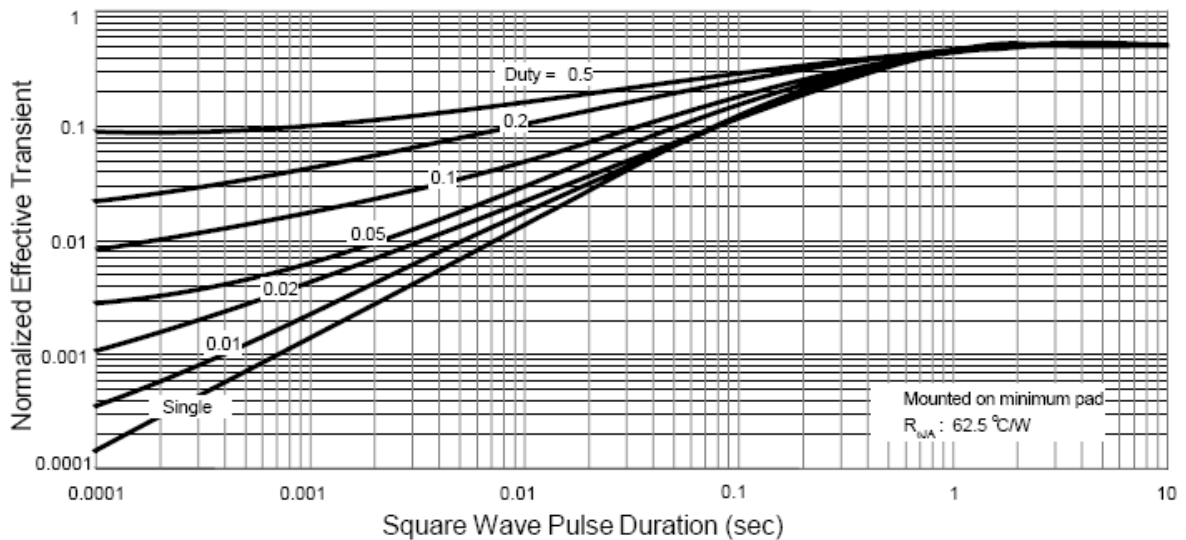
Drain Current



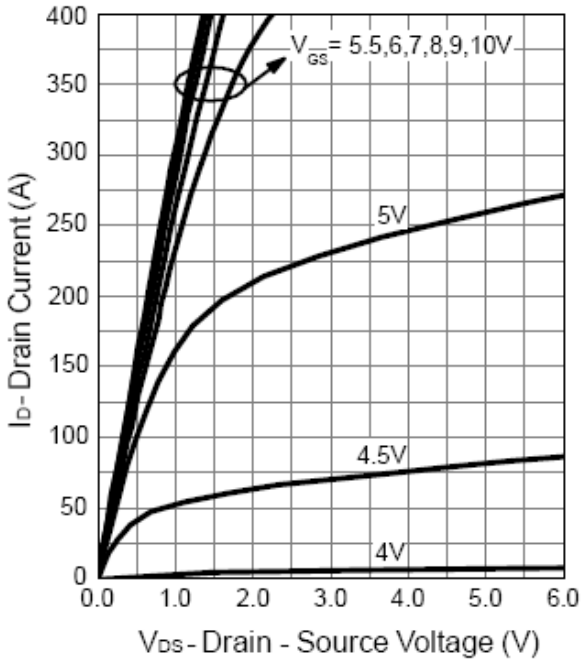
Safe Operation Area



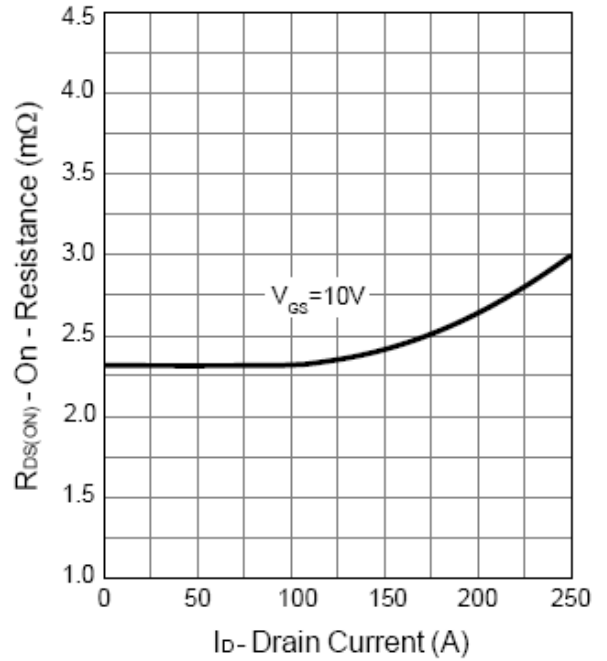
Thermal Transient Impedance



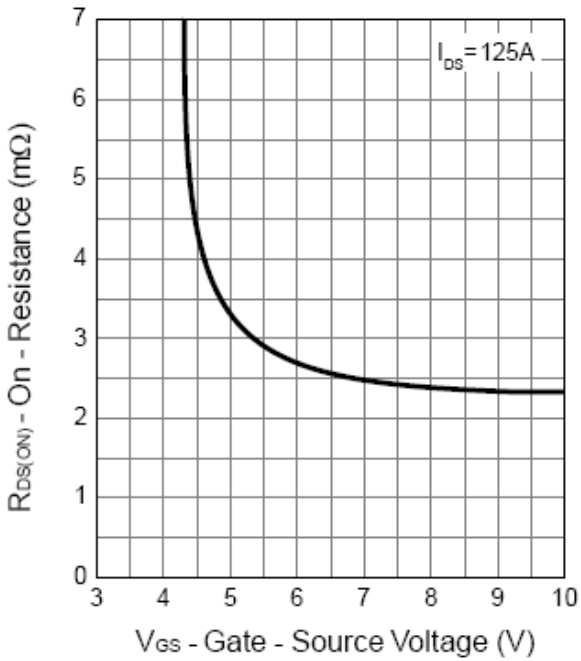
Output Characteristics



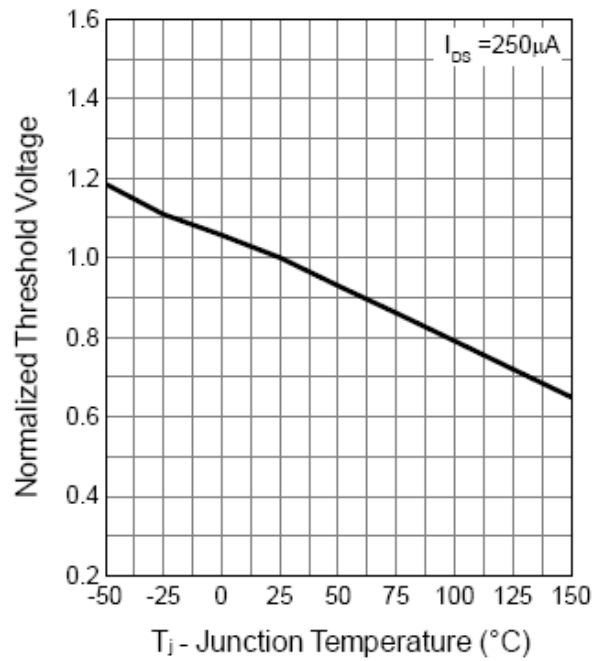
Drain-Source On Resistance



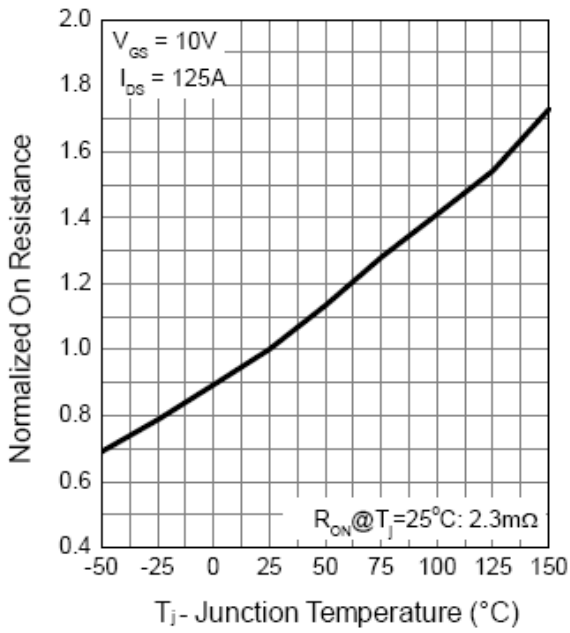
Gate-Source On Resistance



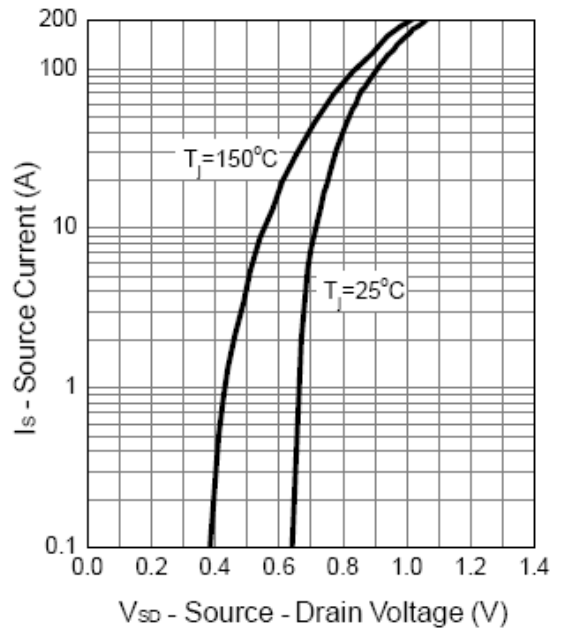
Gate Threshold Voltage



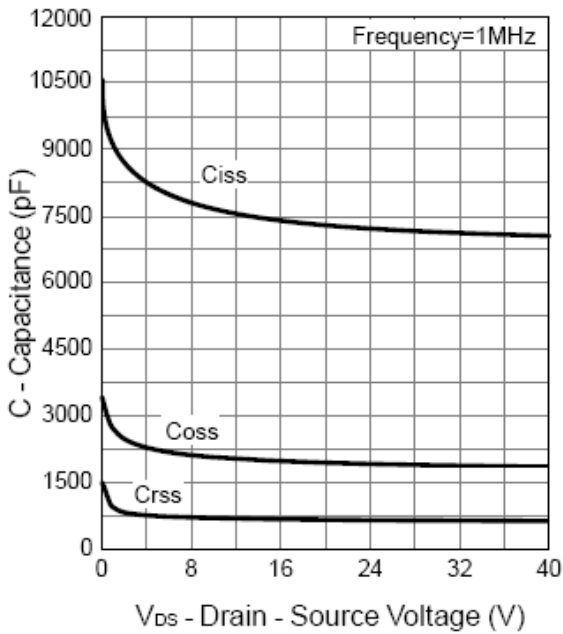
Drain-Source On Resistance



Source-Drain Diode Forward



Capacitance



Gate Charge

