

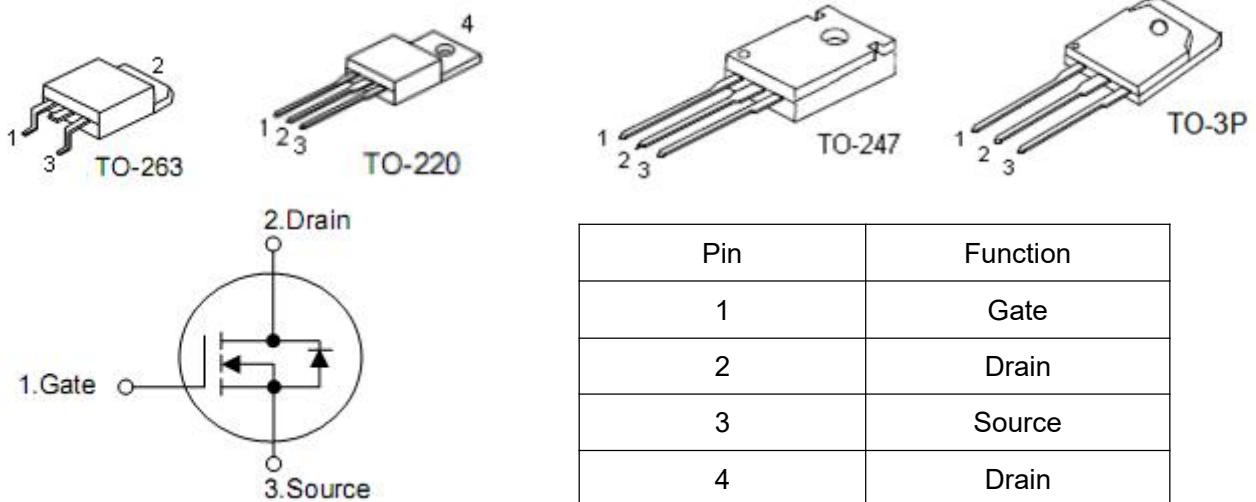
## 1. Features

- $R_{DS(on)}=4.0m\Omega$  (typ.) @  $V_{GS}=10V$
- 100% avalanche tested
- Reliable and rugged
- Lead free and green device available (RoHS Compliant)

## 2. Applications

- Switching application
- Power management for inverter systems

## 3.Symbol



#### 4. Absolute maximum ratings

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

Parameter	Symbol	Rating		Units	
		TO-220/ TO-263	TO-247/ TO-3P		
Drain-source voltage	$V_{DSS}$	80		V	
Gate-source voltage	$V_{GSS}$	±25		V	
Maximum junction temperature	$T_J$	175		°C	
Storage temperature range	$T_{STG}$	-55 to 175		°C	
Diode continuous forward current	$I_S$	150		A	
Continuous drain current	$I_D$	$T_C=25^{\circ}\text{C}$		A	
		$T_C=100^{\circ}\text{C}$		A	
Pulse drain current*	$I_{DM}$	660**		A	
Avalanche energy, single pulsed	$E_{AS}$	1.1***		J	
Maximum power dissipation	$P_D$	$T_C=25^{\circ}\text{C}$	178	214	W
		$T_C=100^{\circ}\text{C}$	89	107	W

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

\*\* Drain current is limited by junction temperature

\*\*\* $V_D=64\text{V}$

#### 5. Thermal characteristics

Parameter	Symbol	Rating	Unit
Thermal resistance, Junction-ambient	$R_{\theta JA}$	62.5	°C/W
Thermal resistance, Junction-case	$R_{\theta JC}$	0.7	°C/W

## 6. Electrical characteristics

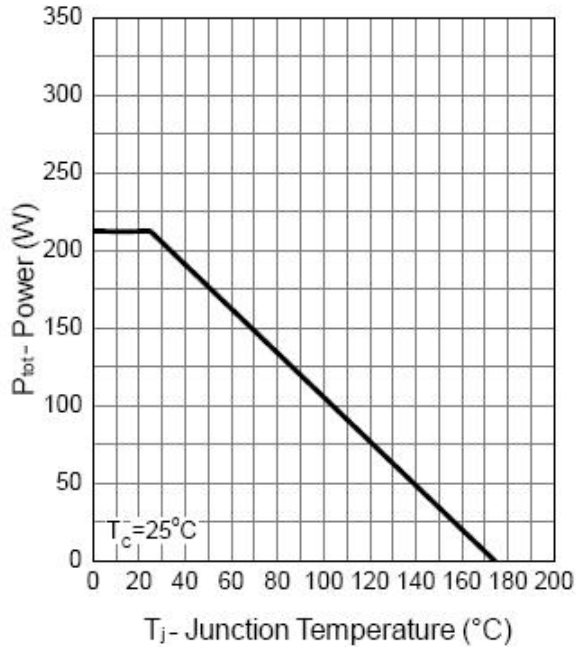
( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Drain-source breakdown voltage	$BV_{DSS}$	$V_{GS}=0V, I_{DS}=250\mu A$	80	-	-	V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS}=80V, V_{GS}=0V$ $T_J=85^{\circ}\text{C}$	-	-	1	$\mu A$
			-	-	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	$I_{GSS}$	$V_{GS}=\pm 25V, V_{DS}=0V$	-	-	$\pm 100$	nA
Drain-source on-state resistance	$R_{DS(on)}^*$	$V_{GS}=10V, I_D=40A$	-	4.0	5.0	m $\Omega$
Gate resistance	$R_g$	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	-	1.8	-	$\Omega$
Diode forward voltage	$V_{SD}^*$	$I_{SD}=40A, V_{GS}=0V$	-	0.8	1.2	V
Reverse recovery time	$t_{rr}$	$I_{SD}=85A,$ $di_{SD}/dt=100A/\mu s$	-	30	-	nS
Reverse recovery charge	$Q_{rr}$		-	52	-	nC
Input capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V,$ $f=1\text{MHz}$	-	6109	-	pF
Output capacitance	$C_{oss}$		-	995	-	
Reverse transfer capacitance	$C_{rss}$		-	530	-	
Turn-on delay time	$t_{d(on)}$	$V_{DD}=40V, I_{DS}=85A,$ $R_G=6\Omega, V_{GS}=10V$	-	28	-	ns
Rise time	$t_r$		-	18	-	
Turn-off delay time	$t_{d(off)}$		-	42	-	
Fall time	$t_f$		-	54	-	
Total gate charge	$Q_g$	$V_{DS}=64V, V_{GS}=10V$ $I_{DS}=85A$	-	152	-	nC
Gate-source charge	$Q_{gs}$		-	25	--	
Gate-drain charge	$Q_{gd}$		-	53	--	

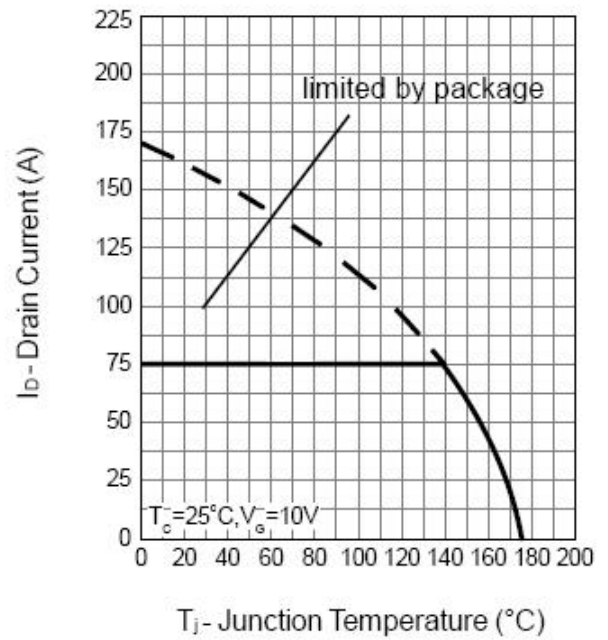
Note\*: Pulse test; pulse width  $\leq 300\mu s$  duty cycle  $\leq 2\%$ .

**7. Test circuits and waveforms**

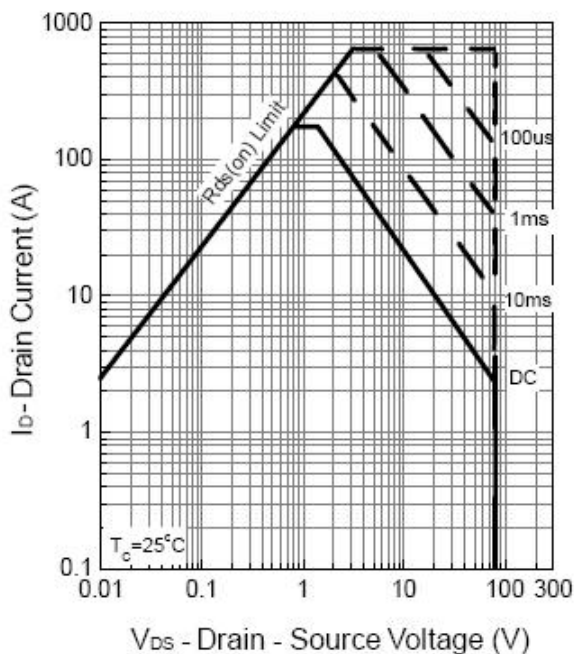
**Power Dissipation**



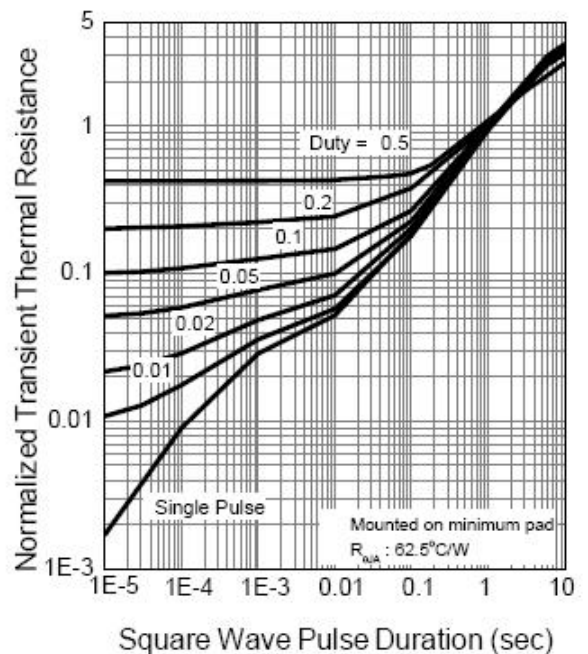
**Drain Current**



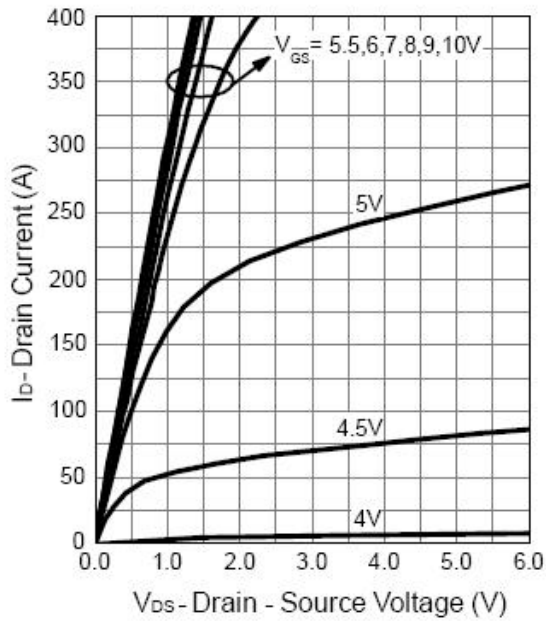
**Safe Operation Area**



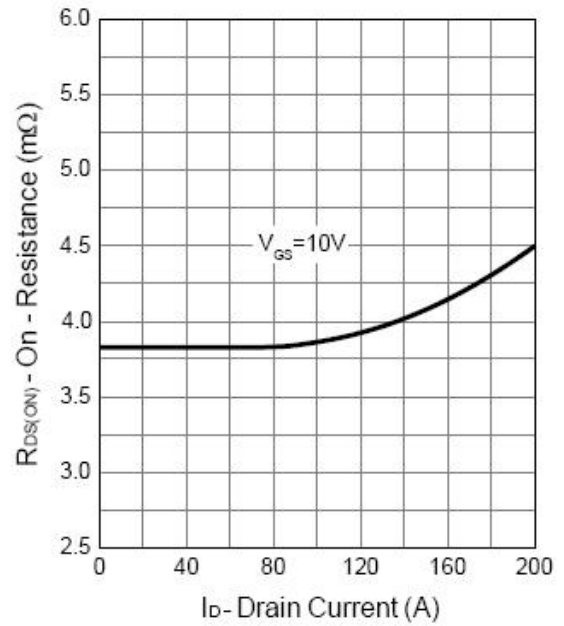
**Thermal Transient Impedance**



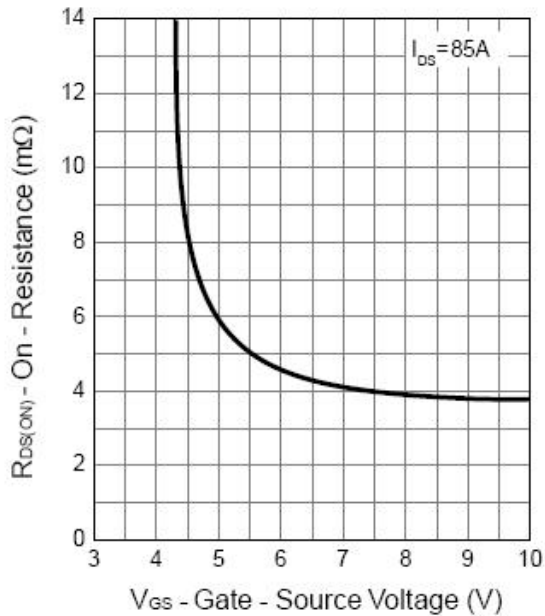
**Output Characteristics**



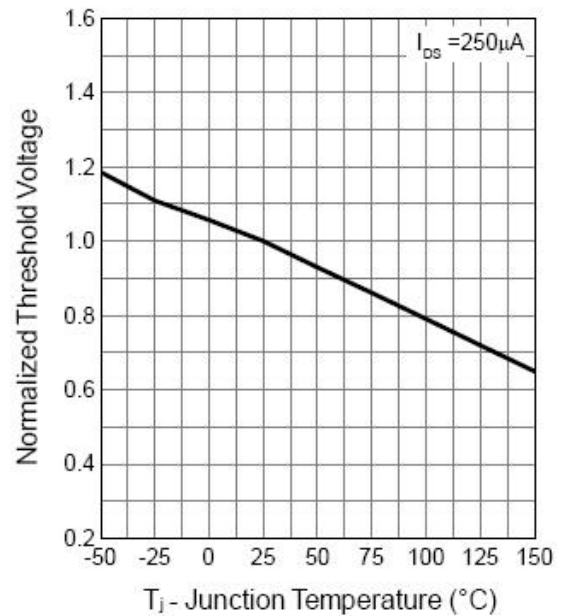
**Drain-Source On Resistance**



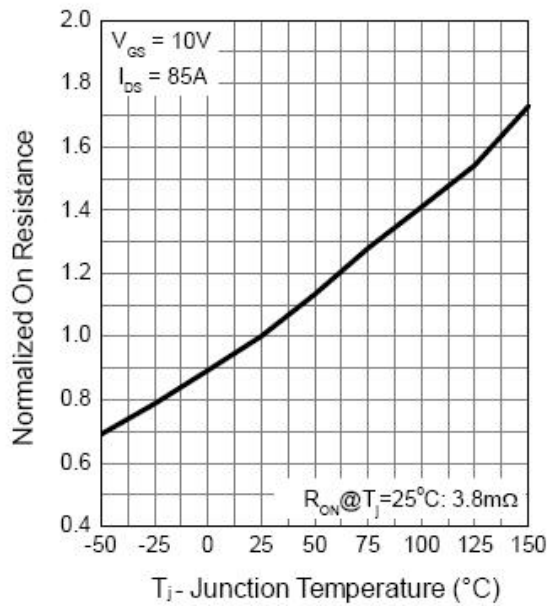
**Gate-Source On Resistance**



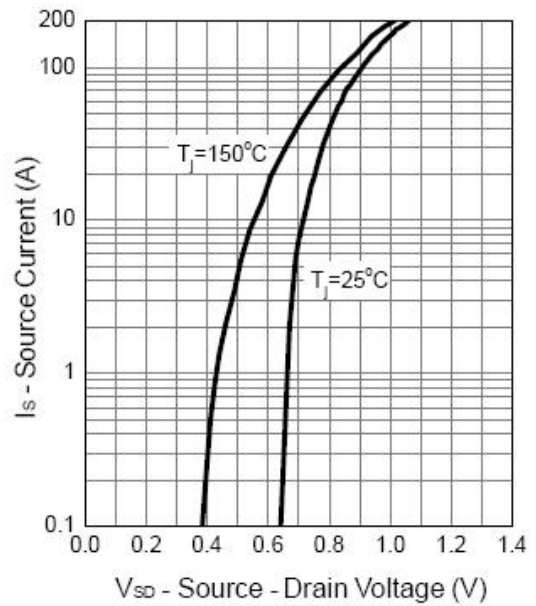
**Gate Threshold Voltage**



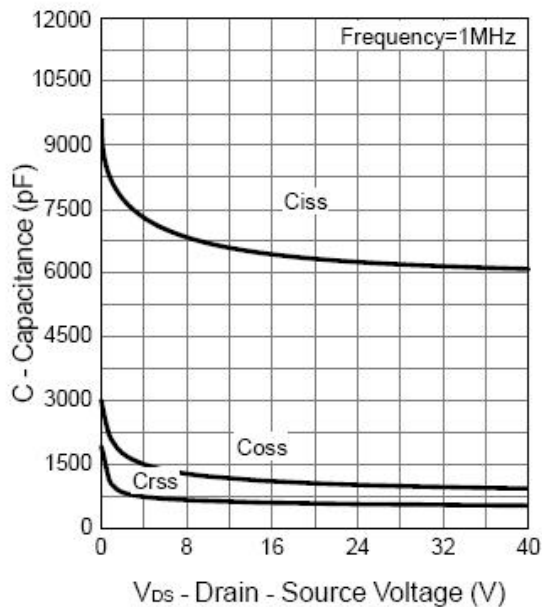
**Drain-Source On Resistance**



**Source-Drain Diode Forward**



**Capacitance**



**Gate Charge**

