

FEATURES

- 60V/210A
RDS(ON)= 4mΩ (Max)@ VGS=10V
 - Lead free and Green Device Available
 - Low Rds-on to Minimize Conductive Loss
 - High avalanche Current
-
- Application
 - Power Supply
 - UPS
 - Battery Management System

$$BV_{DSS} = 60\text{ V}$$

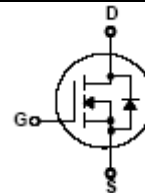
$$R_{DS(on) \text{ typ}} = 4\text{ m}\Omega$$

$$I_D = 210\text{ A}$$

TO-220



1. Gate 2. Drain 3. Source



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

Symbol	Parameter	Maximum	Unit
V_{DSS}	Drain-to-Source Voltage	60	V
V_{GSS}	Gate-to-Source Voltage	± 25	V
I_D^3	Continuous Drain Current	$T_C=25^\circ\text{C}$	210
		$T_C=100^\circ\text{C}$	130
I_{DP}^4	Pulsed Drain Current	$T_C=25^\circ\text{C}$	A
I_{AS}^5	Avalanche Current	40	
EAS^5	Avalanche energy	800	mJ
PD	Maximum Power Dissipation	$T_C=25^\circ\text{C}$	220
		$T_C=100^\circ\text{C}$	110
T_J, T_{STG}	Junction & Storage Temperature Range	-55~175	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta jc}$	Thermal Resistance-Junction to Case	0.68	$^\circ\text{C}/\text{W}$
$R_{\theta ja}$	Thermal Resistance-Junction to Ambient	62.5	

Electrical Characteristics (TA=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	60	—	—	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=48V, V_{GS}=0V$	—	—	1	uA
		$T_J=125^\circ C$	—	—	20	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3	4	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 25V, V_{DS}=0V$	—	—	± 100	nA
$R_{DS(on)}^1$	Drain-Source On-Resistance	$V_{GS}=10V, I_D=75A$	—	3.2	4	mΩ
			—	—	—	
Diode Characteristics						
V_{SD}^1	Diode Forward Voltage	$I_{SD}=75A, V_{GS}=0V$	—	0.8	1.3	V
I_S^3	Diode Continuous Forward Current		—	—	50	A
t_{rr}	Reverse Recovery Time	$I_F=75A, V_{DD}=60V$	—	48	—	nS
Q_{rr}	Reverse Recovery Charge	$di/dt=100A/\mu s$	—	72	—	nC
Dynamic Characteristics²						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V,$ Frequency=1MHz	—	2	—	Ω
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=25V$ Frequency=1MHz	—	5800	—	pF
C_{oss}	Output Capacitance		—	1020	—	
C_{rss}	Reverse Transfer Capacitance		—	505	—	
$t_{d(on)}$	Turn-On Delay Time	$V_{DD}=30V, I_D=75A,$ $V_{GS}=10V, R_G=25\Omega$	—	29	—	nS
t_r	Rise Time		—	19	—	
$t_{d(off)}$	Turn-Off Delay Time		—	42	—	
t_f	Fall Time		—	53	—	
Gate Charge Characteristics²						
Q_g	Total Gate Charge	$V_{DS}=48V, V_{GS}=10V$ $I_D=75A$	—	135	—	nC
Q_{gs}	Gate-to-Source Charge		—	23	—	
Q_{gd}	Gate-to-Drain Charge		—	48	—	

Note: 1: Pulse test; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

2: Guaranteed by design, not subject to production testing.

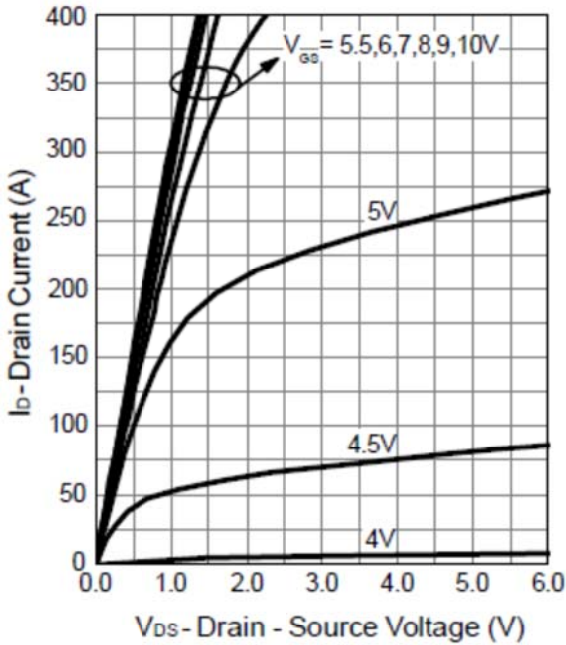
3: Package limitation current is 50A. Calculated continuous current based on maximum allowable junction temperature.

4: Repetitive rating, pulse width limited by max junction temperature.

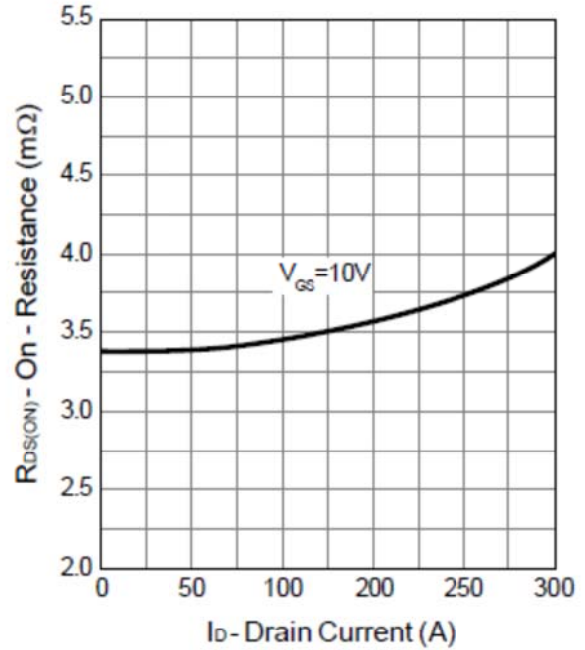
5: Starting $T_J = 25^\circ C, L = 0.5mH, I_{AS} = 82A$.

Typical Operating Characteristics

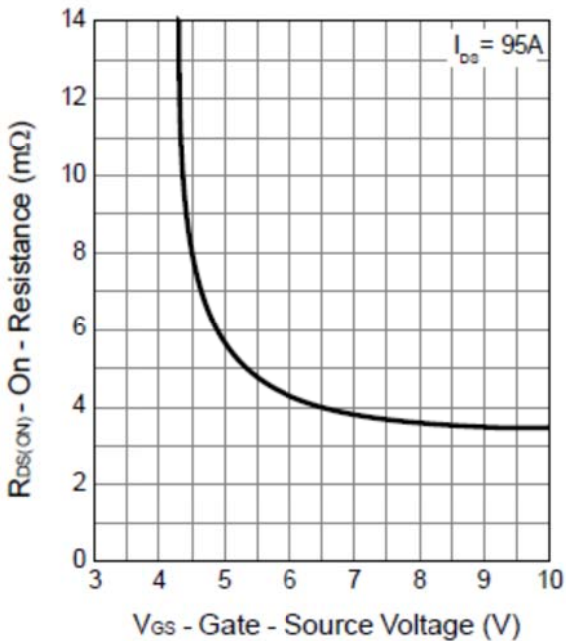
Output Characteristics



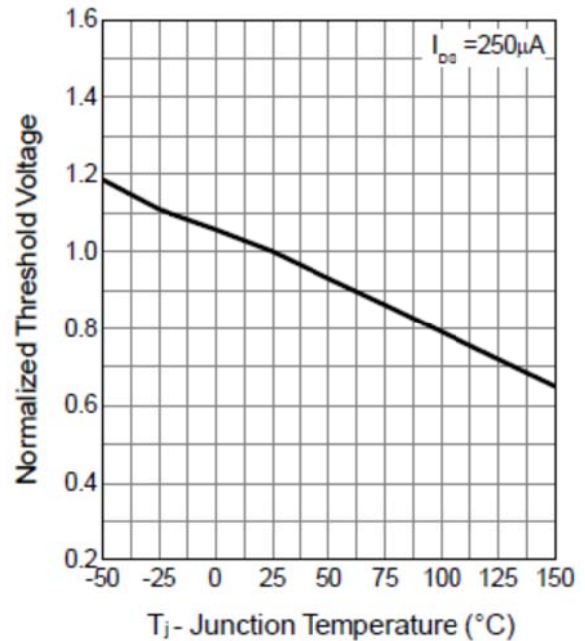
Drain-Source On Resistance



Gate-Source On Resistance

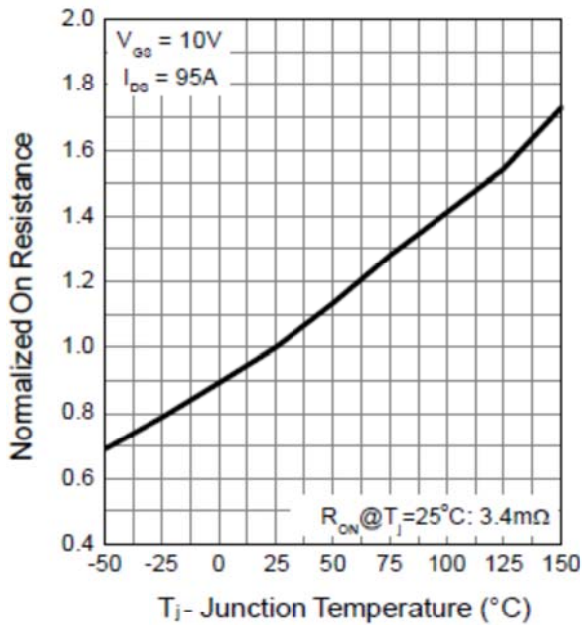


Gate Threshold Voltage

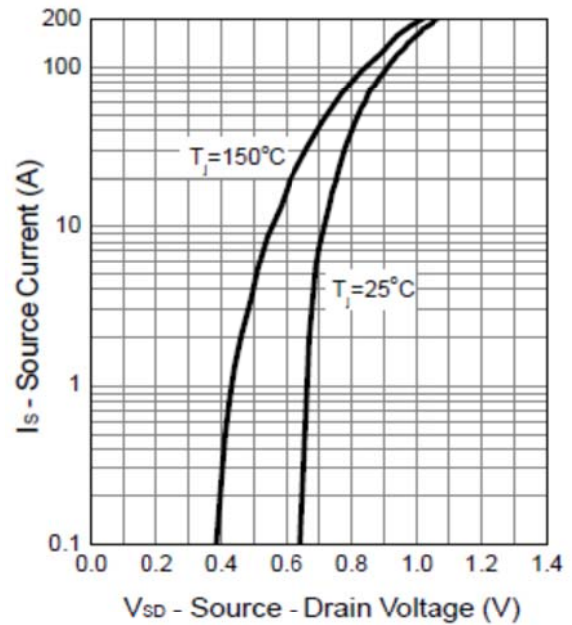


Typical Operating Characteristics

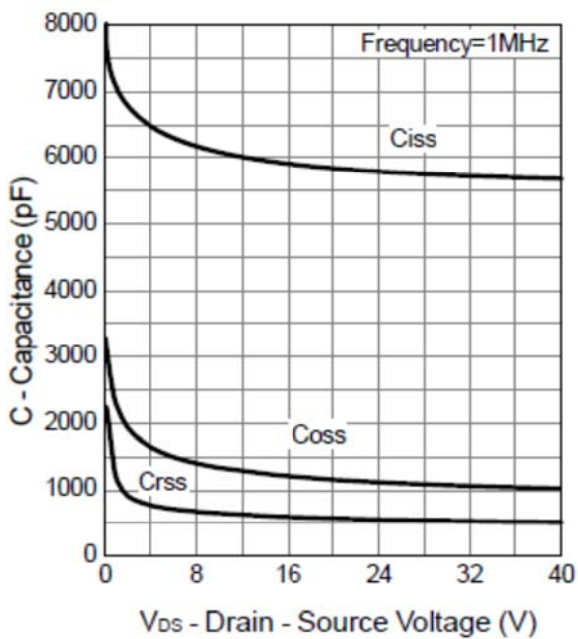
Drain-Source On Resistance



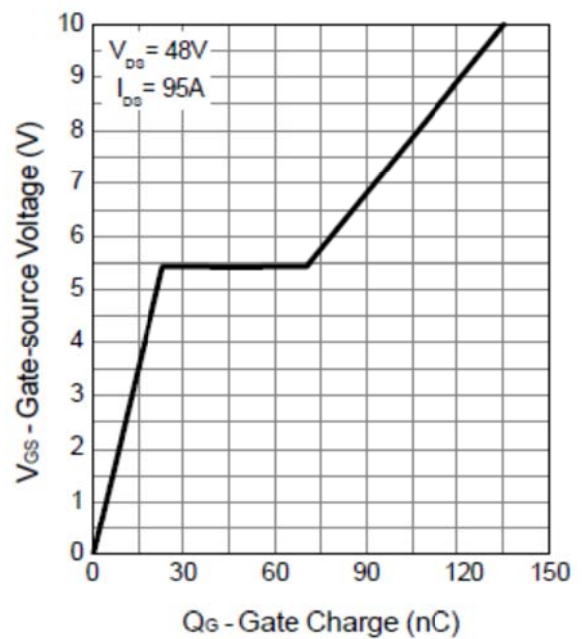
Source-Drain Diode Forward



Capacitance

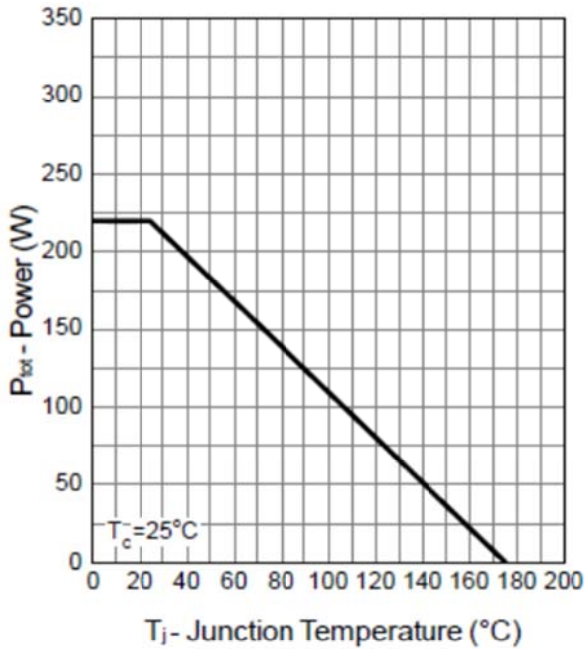


Gate Charge

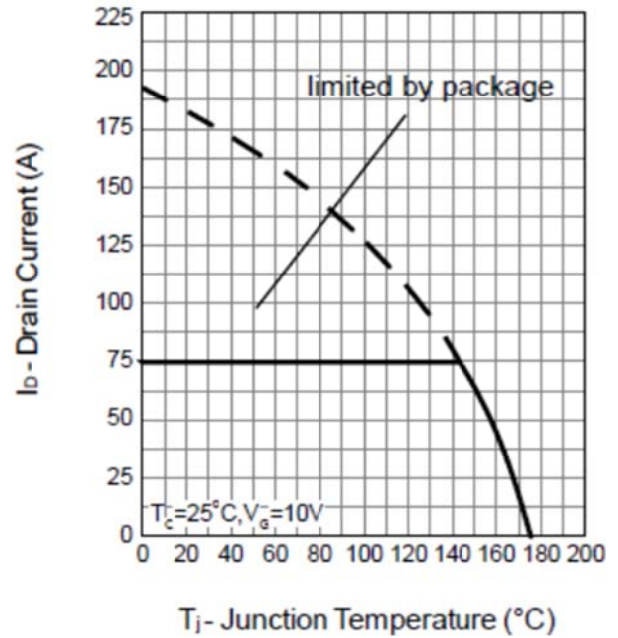


Typical Operating Characteristics

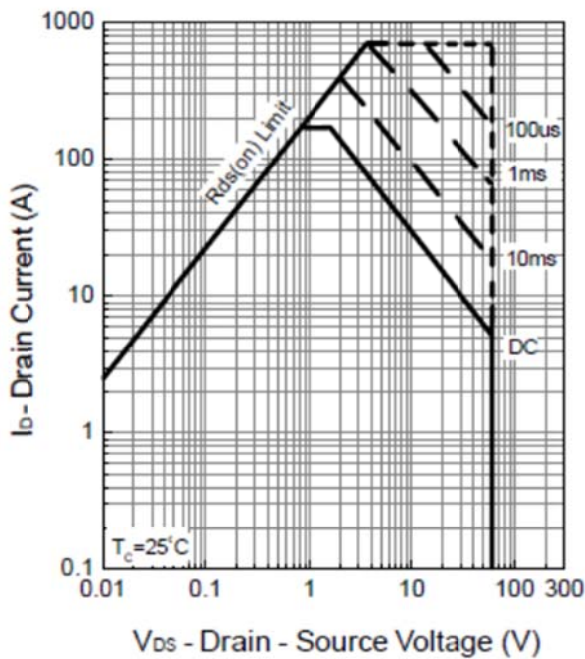
Power Dissipation



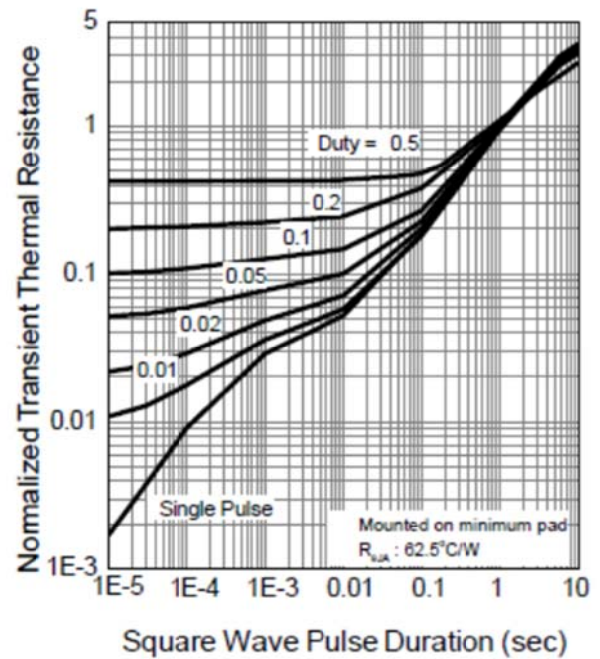
Drain Current



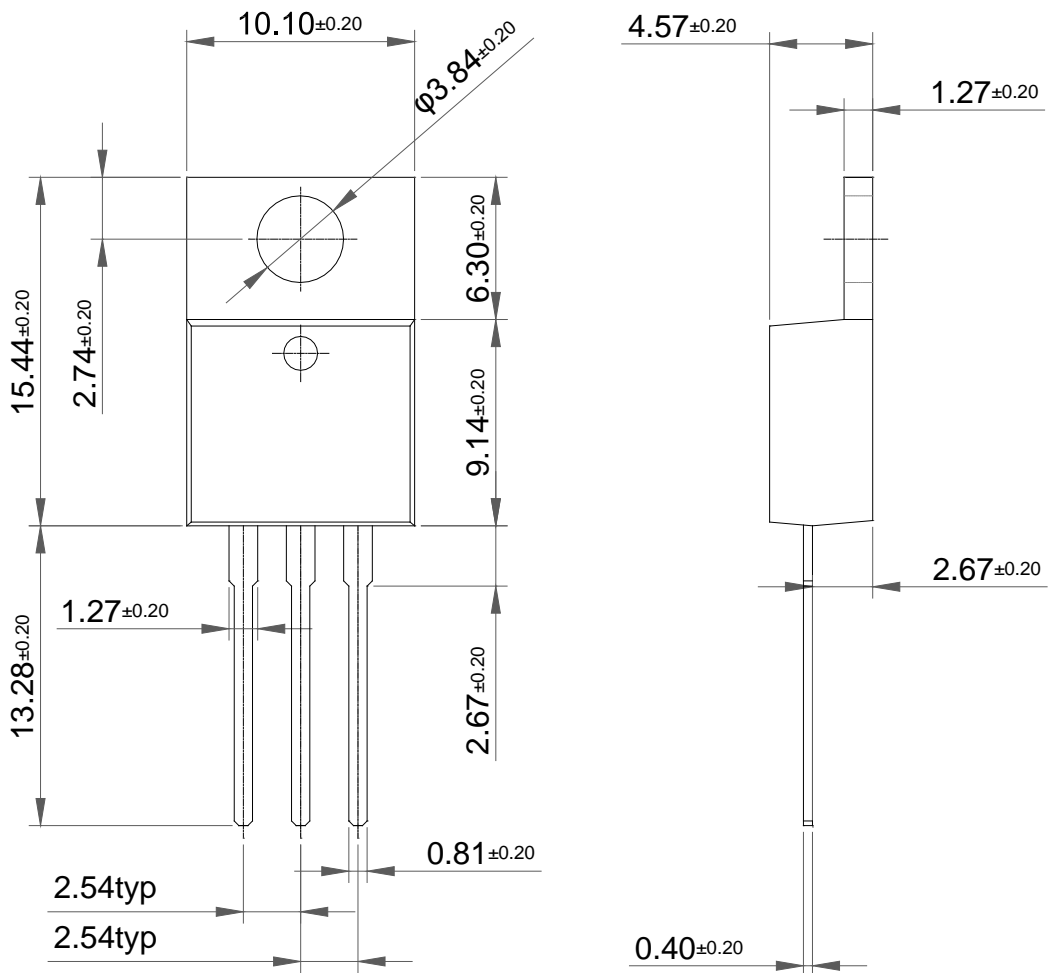
Safe Operation Area



Thermal Transient Impedance



TO-220



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