

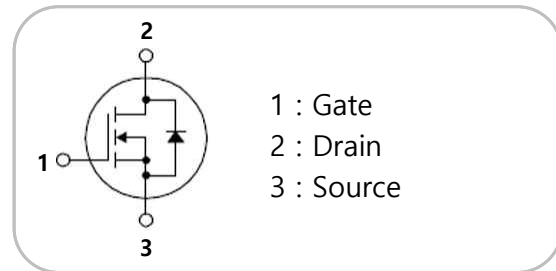
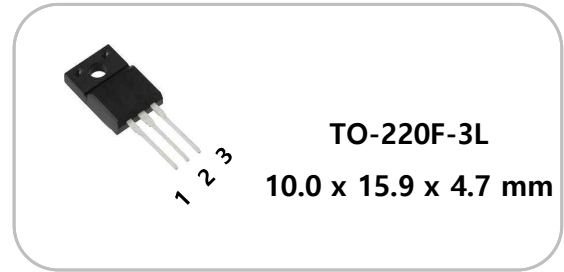
## General description

Symbol	Value
$V_{DSS}$ @ $T_C=25^\circ\text{C}$	Min 600V
$I_D$ @ $T_C=25^\circ\text{C}$	10.0A
$R_{DS(on)}$	Max 0.75Ω
$Q_G$	Typ 35nC

## Features

- Gate Charge(Typ.  $Q_G=35\text{nC}$ )
- High Voltage (Min.  $V_{DSS}=600\text{V}$ )
- 100% Avalanche Tested

## Package



## Maximum Ratings ( $T_C = 25^\circ\text{C}$ )

Parameter	Symbol	Test Condition	Value	Units
Drain-source voltage	$V_{DSS}$	$V_{GS}=0\text{V}$ , $I_D=250\mu\text{A}$	600	V
Drain current (DC)	$I_D$	$T_C=25^\circ\text{C}$	10.0	A
		$T_C=100^\circ\text{C}$	5.8	A
Drain current (Pulsed)	$I_{DM}$	Pulse width limited by junction temperature	38.0	A
Gate-source voltage	$V_{GS}$	-	$\pm 30$	V
Single pulsed avalanche energy	$E_{AS}$	$I_{AS}=9.5\text{A}$ , $R_G=25\Omega$ , $V_{DD}=50\text{V}$ , $L=10.0\text{mH}$	480	mJ
Power dissipation	$P_D$	$T_C=25^\circ\text{C}$	40	W
Operating junction	$T_j$	-	-55 to 150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-	-55 to 150	$^\circ\text{C}$




**Electrical Characteristics ( $T_j = 25^\circ\text{C}$ )**

Parameter	Symbol	Test Condition				Units
			Min	Typ	Max	
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	600	-	-	V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS}=600V, V_{GS}=0V$	-	-	1.0	$\mu A$
Gate-source leakage current	$I_{GSS}$	$V_{GS}=\pm 30V, V_{DS}=0V$	-	-	$\pm 100$	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0	-	4.0	V
Drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=5.0A$	-	0.60	0.75	$\Omega$
Input capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V, f=1MHz$	-	2000	2350	pF
Output capacitance	$C_{oss}$		-	160	215	
Reverse transfer capacitance	$C_{rss}$		-	18	-	
Total gate charge	$Q_G$	$V_{DS}=480V, V_{GS}=10V, I_D=10A$	-	35	57	nC
Gate-source charge	$Q_{GS}$		-	9	-	
Gate-drain charge	$Q_{GD}$		-	10	-	
Turn on delay time	$t_{d(on)}$	$V_{DD}=300V, I_D=10A, R_G=25\Omega$	-	23	-	ns
Rise time	$t_r$		-	69	-	
Turn off delay time	$t_{d(off)}$		-	144	-	
Fall time	$t_f$		-	77	-	




**Body Diode(Source – Drain) Electrical Characteristics (T<sub>j</sub> = 25°C)**

Parameter	Symbol	Test Condition	Value			Units
			Min	Typ	Max	
Continuous diode forward current	I <sub>S</sub>	-	-	-	10.0	A
Maximum pulsed drain to source diode forward current	I <sub>SM</sub>	-	-	-	40.0	A
Forward voltage	V <sub>SD</sub>	I <sub>SD</sub> =10.0A, V <sub>GS</sub> =0V	-	-	1.4	V
Reverse recovery time	t <sub>rr</sub>	I <sub>SD</sub> =10.0A, V <sub>GS</sub> =0V di/dt=100A/μs	-	470.0	-	ns
Reverse recovery charge	Q <sub>rr</sub>		-	6.0	-	uC

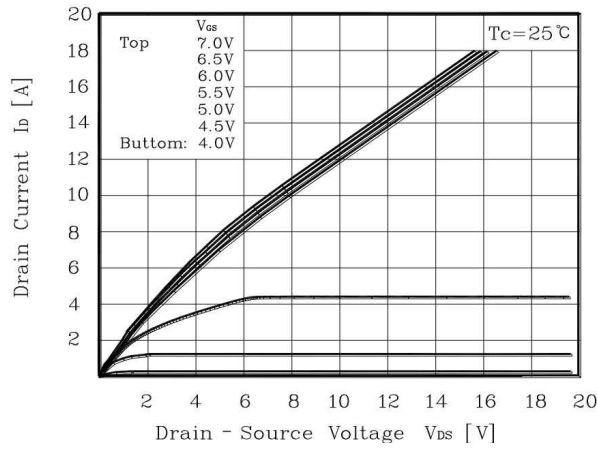

**Thermal Characteristics(T<sub>C</sub> = 25°C)**

Symbol	Parameter	Typ	Max	Units
R <sub>th(j-c)</sub>	Junction to case	-	3.1	°C/W

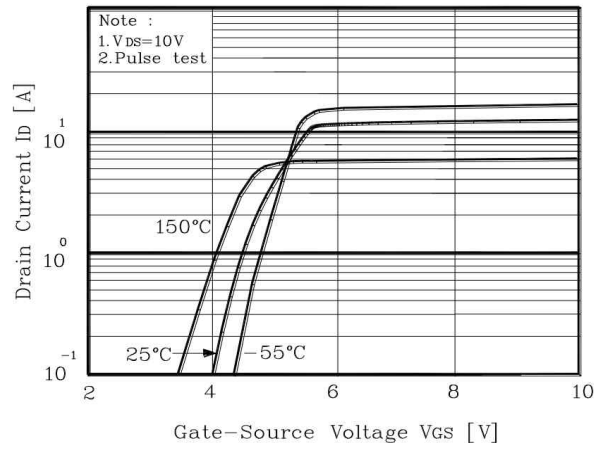


**Typical Electrical Characteristics Curves (T<sub>j</sub> = 25°C)**

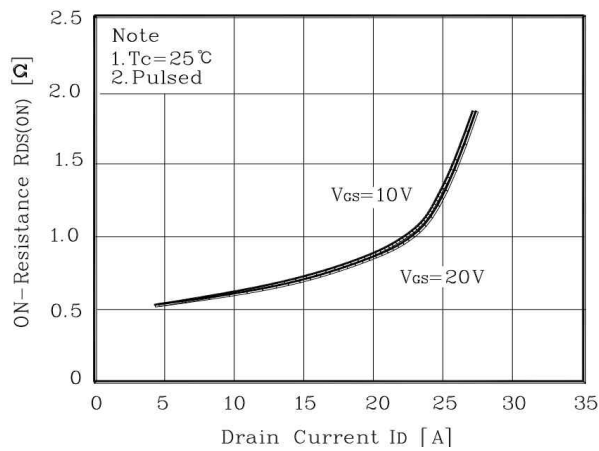
**V<sub>DS</sub> – I<sub>D</sub> Characteristics**



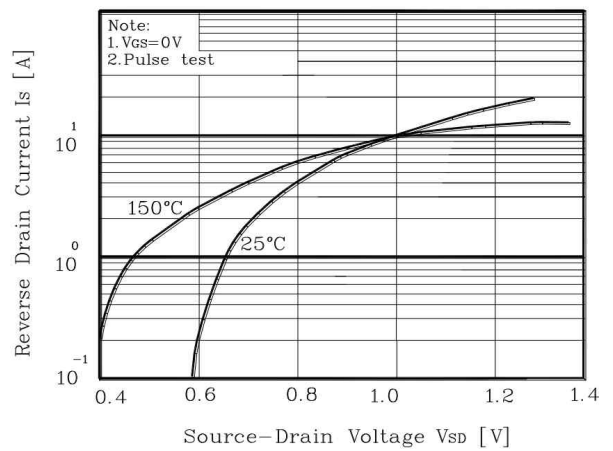
**V<sub>GS</sub> – I<sub>D</sub> Characteristics**



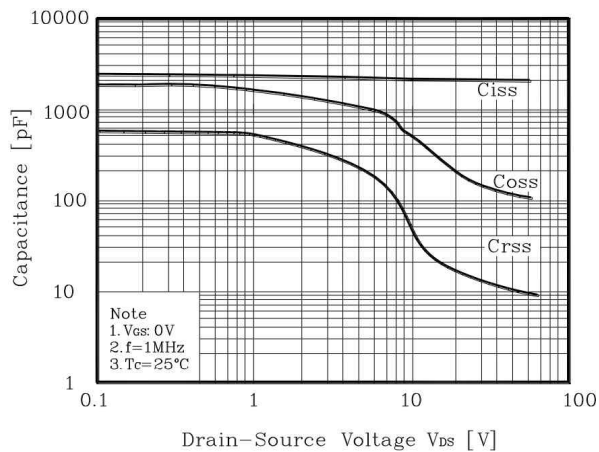
**I<sub>D</sub> – R<sub>DS(on)</sub> Characteristics**



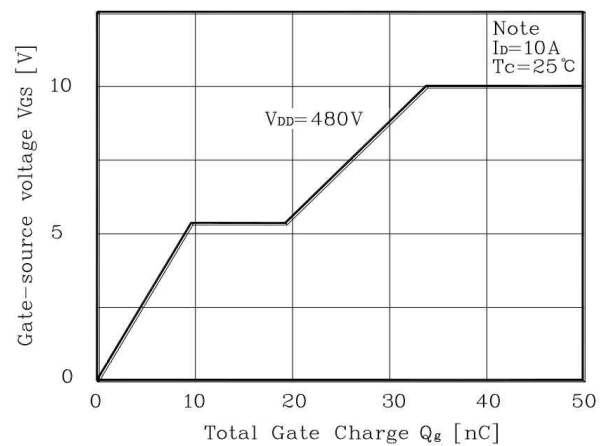
**V<sub>SD</sub> – I<sub>S</sub> Characteristics**



**V<sub>DS</sub> – C<sub>T</sub> Characteristics**

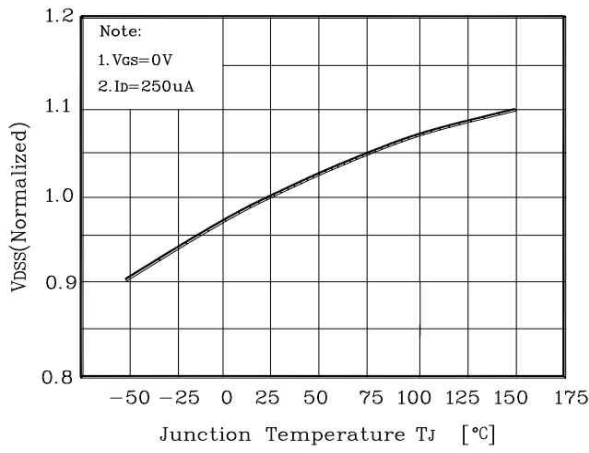


**Q<sub>g</sub> – V<sub>GS</sub> Characteristics**

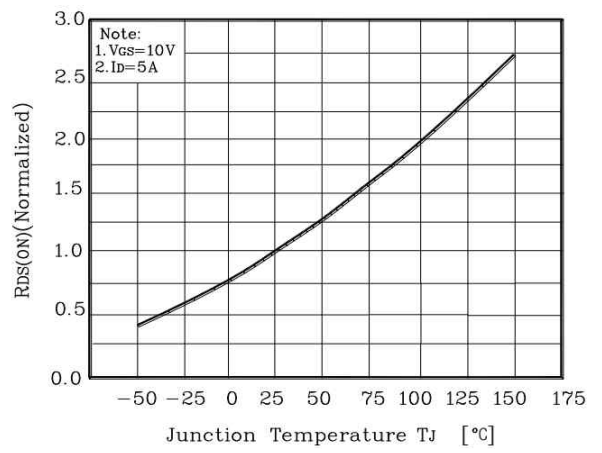


**Typical Electrical Characteristics Curves ( $T_j = 25^\circ\text{C}$ )**

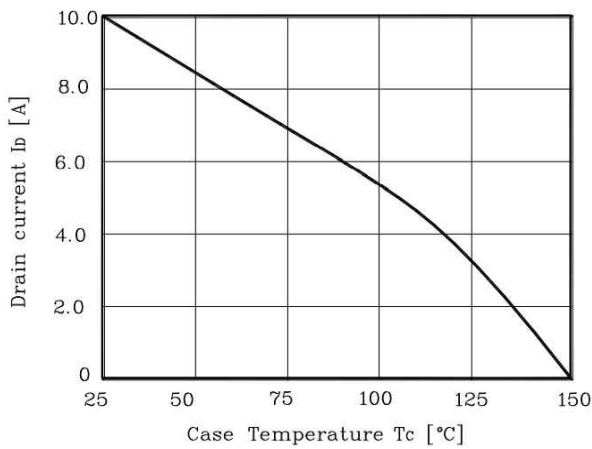
$T_j - V_{DSS}(\text{Normalized})$  Characteristics



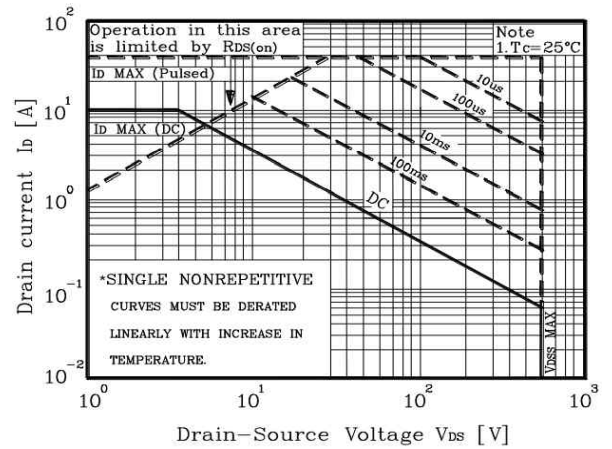
$T_j - R_{DS(on)}(\text{Normalized})$  Characteristics



$T_c - I_D$  Characteristics

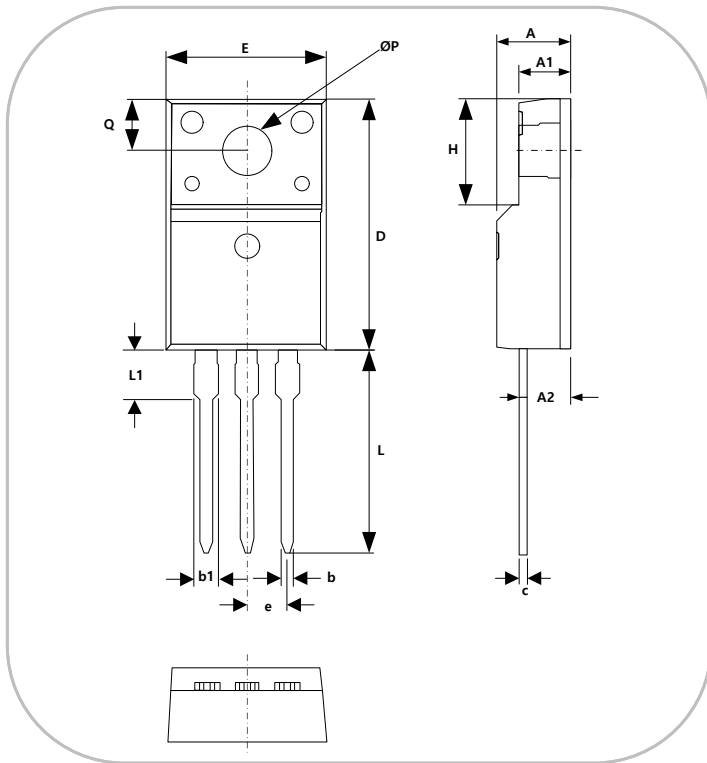


SOA Characteristics



## Package Dimensions(TO-220F-3L)

[Unit : mm]



SYMBOL	MIN	MAX
A	4.50	4.90
A1	2.34	2.74
A2	2.56	2.96
b	0.70	0.90
b1	1.27	1.47
c	0.45	0.60
D	15.67	16.07
E	9.96	10.36
e	2.54 BSC	
H	6.48	6.88
L	12.68	13.28
L1	3.03	3.43
φP	3.08	3.28
Q	3.20	3.40

## Marking Information

