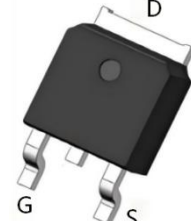
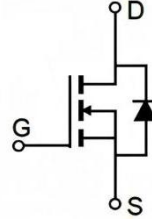


N-Channel Enhancement Mode MOSFET

Parameter	Value	Unit
V_{DS}	650	V
$R_{DS(on)}$	1.25	Ω
I_D	7.0	A



TO-252



TO-220F

Features

- Fast Switching Capability
- Avalanche Energy Specified
- Improved dv/dt Capability, High Ruggedness

Applications

- Switch Mode Power Supply(SMPS)
- Uninterruptible Power Supply(UPS)
- Power Factor Correction(PFC)

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

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	650	V
Gate Source Voltage		V_{GS}	± 30	V
Continuous Drain Current		I_D	7.0	A
Pulsed Drain Current (Note ²)		I_{DM}	14	A
Avalanche Energy Single Pulsed (Note ³)		E_{AS}	150	mJ
Peak Diode Recovery dv/dt (Note ⁴)		dv/dt	3.2	V/ns
Power Dissipation	TO-220F	P_D	30	W
	TO-252		50	W
Junction Temperature		T_J	150	$^{\circ}\text{C}$
Storage Temperature		T_{STG}	-55 to 150	$^{\circ}\text{C}$
Thermal Resistance from Junction to Ambient	TO-220F	$R_{\theta JA}$	62.5	$^{\circ}\text{C/W}$
	TO-252		100	
Thermal Resistance From Junction To Case	TO-220F	$R_{\theta JC}$	3.4	$^{\circ}\text{C/W}$
	TO-252		2.5	

Note:

1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.
 Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. Repetitive Rating: Pulse width limited by maximum junction temperature.
3. $L=19.5\text{mH}$, $I_{AS}=4\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\ \Omega$, Starting $T_J=25^{\circ}\text{C}$
4. $ISD \leq 7.0\text{A}$, $di/dt \leq 200\text{A}/\mu\text{s}$, $V_{DD} \leq BVDSS$, Starting $T_J=25^{\circ}\text{C}$

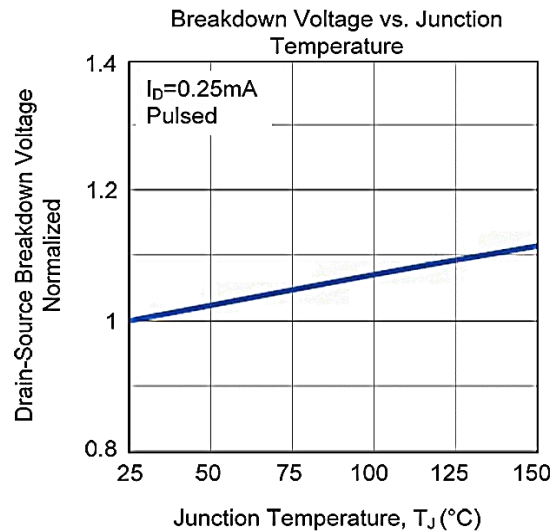
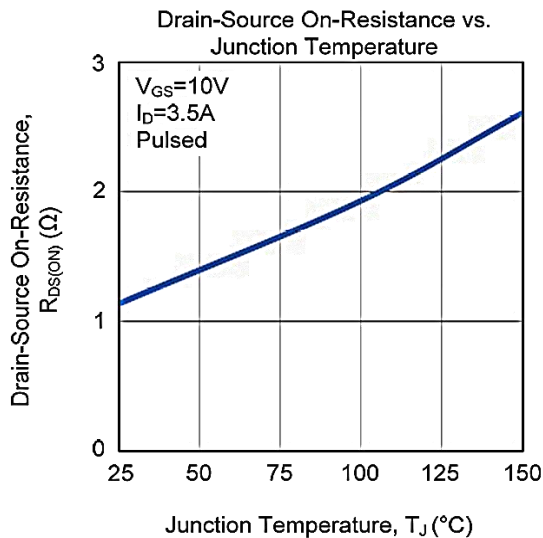
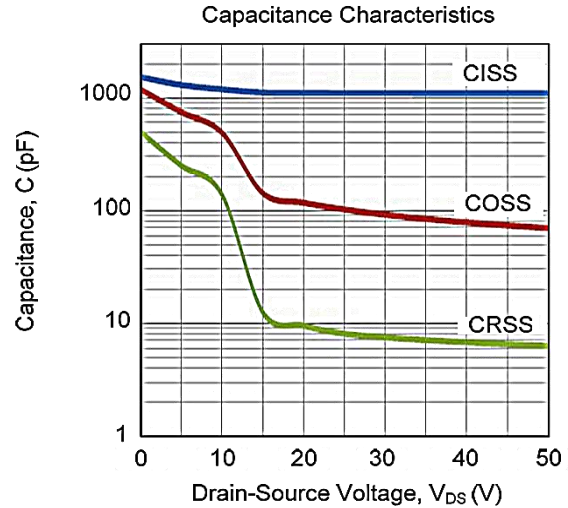
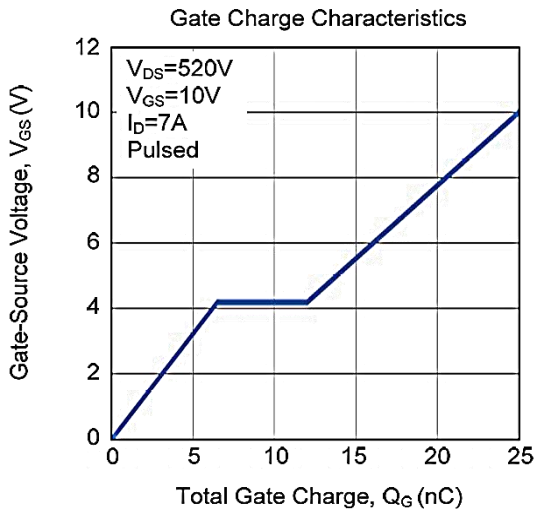
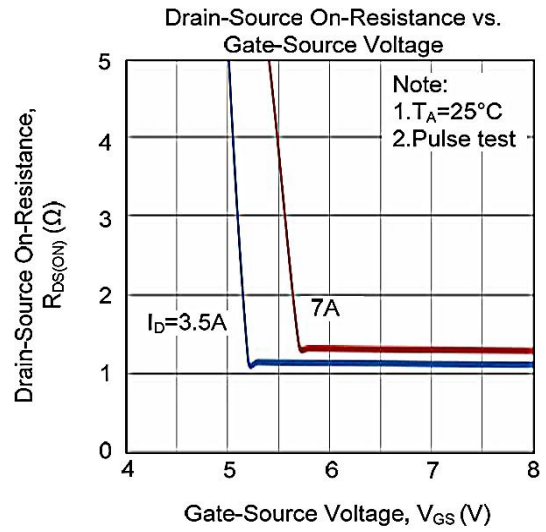
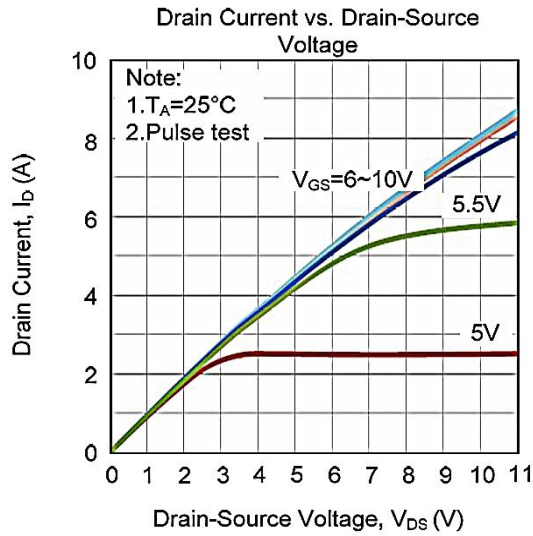
Electrical Characteristics(T_J=25°C, unless otherwise noted)

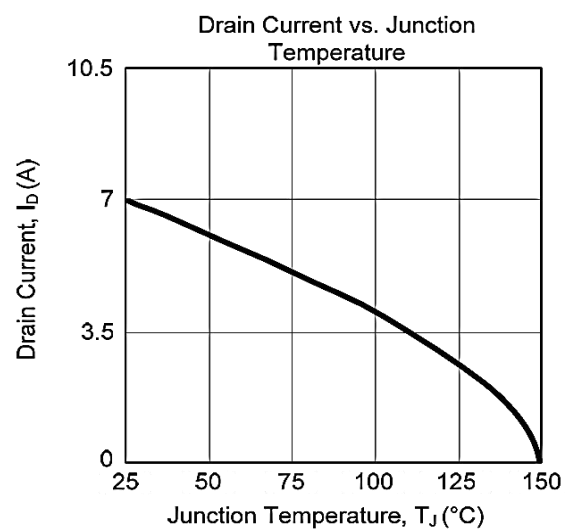
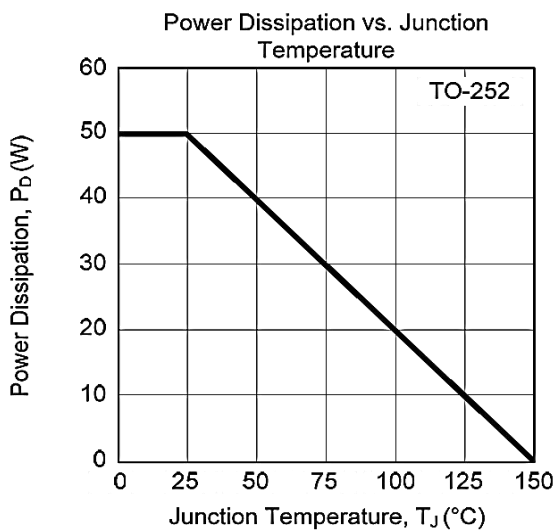
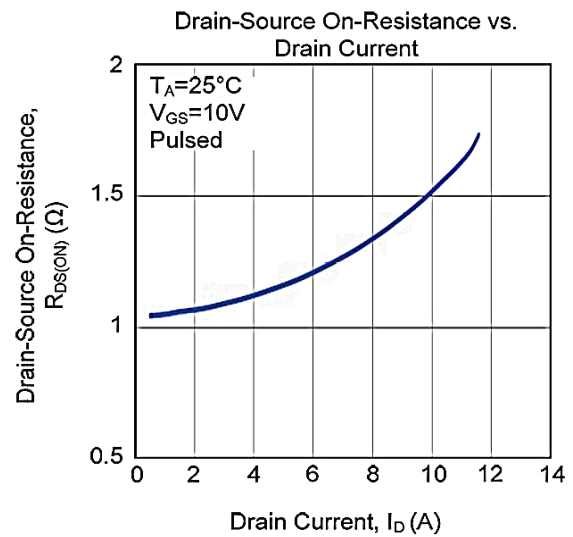
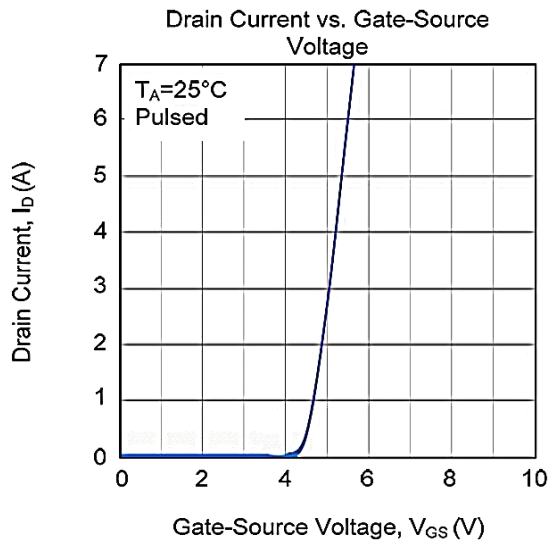
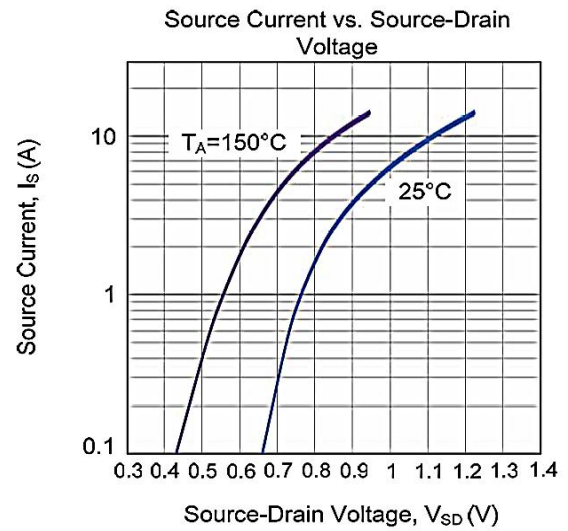
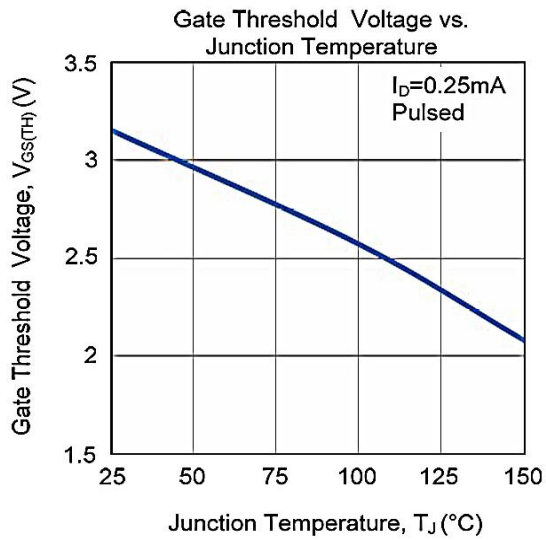
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	650	--	--	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =650V, V _{GS} =0V	--	--	1	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±30V, V _{DS} =0V	--	--	±100	nA
On Characteristics						
Drain-source on-state resistance	R _{DS(ON)}	V _{GS} =10V, I _D =3A	--	1.25	1.52	Ω
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =250μA	2.0	--	4.0	V
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =25V, f=1.0MHz	--	750	--	pF
Output Capacitance	C _{oss}		--	65	--	
Reverse Transfer Capacitance	C _{rss}		--	5	--	
Switching Parameters						
Total gate charge	Q _g	V _{DS} =520V, V _{GS} =10V, I _D =7A, I _{GM} =1mA (Note ^{1, 2})	--	25	--	nC
Gate-source charge	Q _{gs}		--	6.5	--	
Gate-drain charge	Q _{gd}		--	5.5	--	
Turn-On Delay Time	t _{d(on)}	V _{DD} =100V, V _{GS} =10V I _D =7A, R _G =25Ω (Note ^{1, 2})	--	10	--	nS
Rise time	t _r		--	19	--	
Turn-Off Delay Time	t _{d(off)}		--	68	--	
Fall time	t _f		--	32	--	
Source- Drain Diode Ratings And Characteristics						
Continuous Drain-Source Current	I _S		--	--	7	A
Pulsed drain-source current	I _{SM}		--	--	14	A
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _{SD} =7A	--	--	1.4	V
Reverse Recovery Time	t _{rr}	V _{GS} =0V, I _{SD} =7A	--	325	--	ns
Reverse Recovery Charge	Q _{rr}	di/dt=100A/μs	--	7.5	--	μC

Notes:

1. Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.
2. Essentially independent of operating temperature.

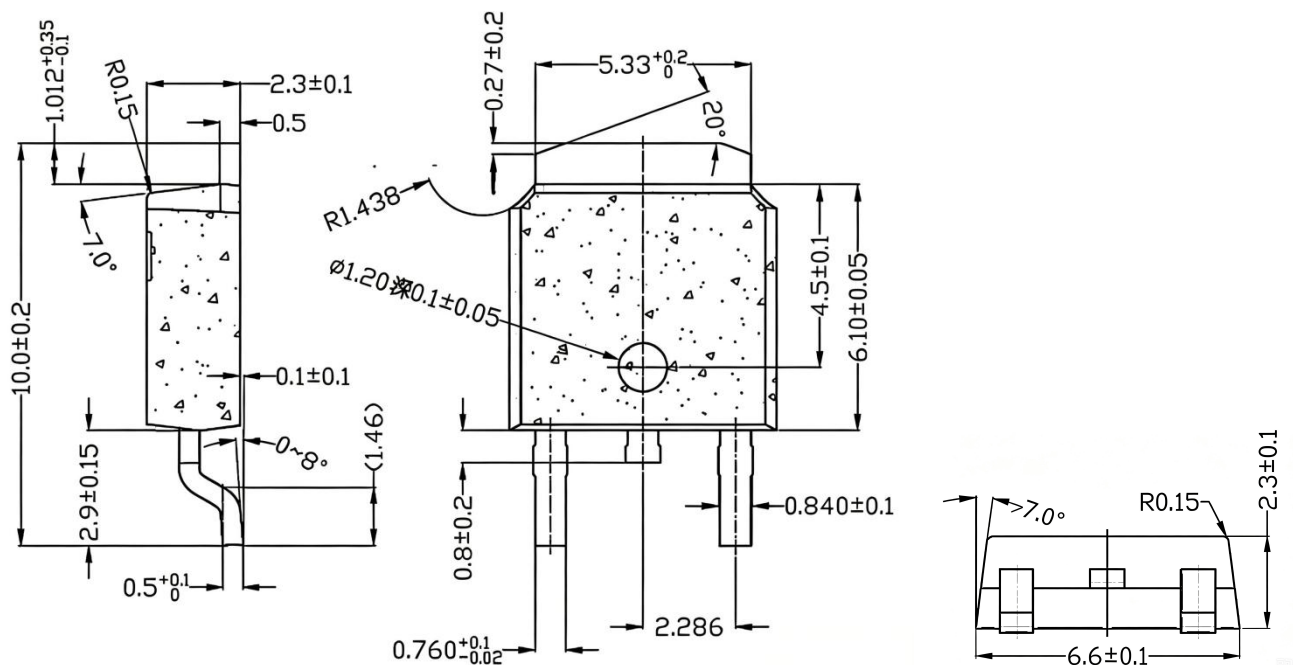
Typical Characteristics



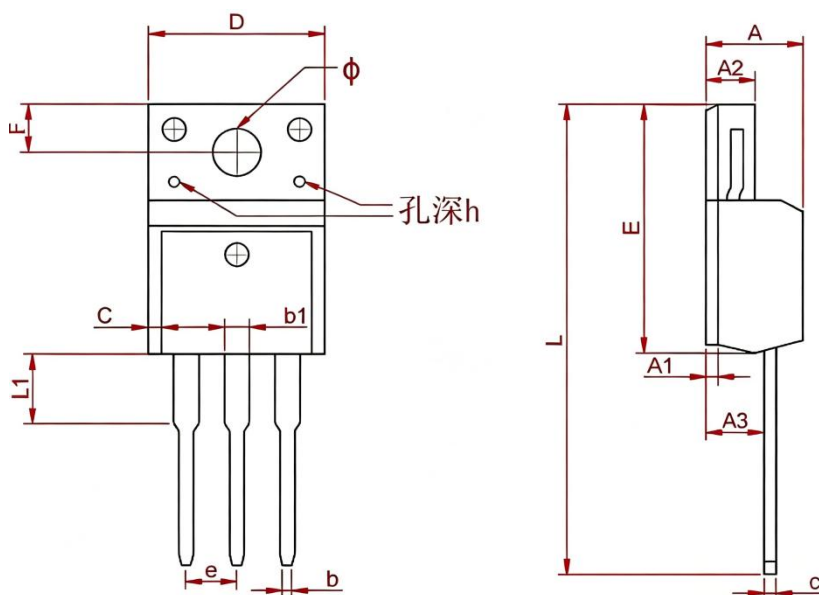


Package Outline

TO-252



TO-220F



Symbol	Dimensions In Millimeters	
	Min	Max
A	4.300	4.750
A1	0.7 REF	
A2	2.300	2.850
A3	2.500	2.900
b	0.380	0.420
b1	1.220	1.280
C	1.08	1.200
c	0.480	0.520
D	10.15	10.450
E	15.700	15.950
e	2.574 TYP	
F	3.470 REF	
y	3.200 REF	
h	0.000	0.800
L	28.780	28.900
L1	2.990	3.100

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