

## N-Channel Enhancement Mode Power MOSFET

### MAIN CHARACTERISTICS

$I_D$	20A
$V_{DSS}$	650V
$R_{DS(on)-typ}$ (@ $V_{GS}=10V$ )	0.42 $\Omega$

### FEATURES

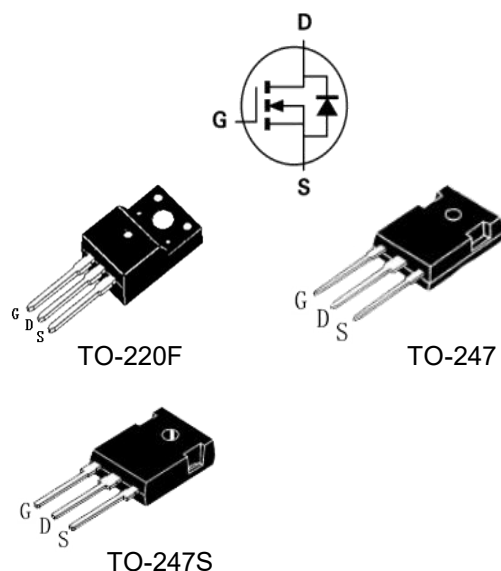
- Fast Switching
- Low ON Resistance
- Low Gate Charge
- 100% Single Pulse avalanche energy Test

### APPLICATIONS

- Power switch circuit of adaptor and charger.

### MECHANICAL DATA

- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275°C maximum, 10s per JESD 22-B106



### Product specification classification

Part Number	Package	Mode Name	Pack
SL20N65F	TO-220F	SL20N65F	Tube
SL20N65T	TO-247	SL20N65T	Tube
SL20N65TS	TO-247S	SL20N65TS	Tube

**Maximum Ratings at Tc=25°C unless otherwise specified**

Characteristics	Symbol	Value		Unit
		220F	247/247S	
Drain-Source Voltage	$V_{DS}$	650		V
Gate-Source Voltage	$V_{GS}$	±30		V
Continue Drain Current	$I_D$	20		A
Pulsed Drain Current (Note1)	$I_{DM}$	80		A
Power Dissipation	$P_D$	45	250	W
Single Pulse Avalanche Energy (Note1)	$E_{AS}$	700		mJ
Operating Temperature Range	$T_J$	150		°C
Storage Temperature Range	$T_{STG}$	-55 to +150		°C
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.78	0.5	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	40	°C/W

Note1:Pulse test: 300  $\mu$ s pulse width, 2 % duty cycle

**Electrical Characteristics at Tc=25°C unless otherwise specified**

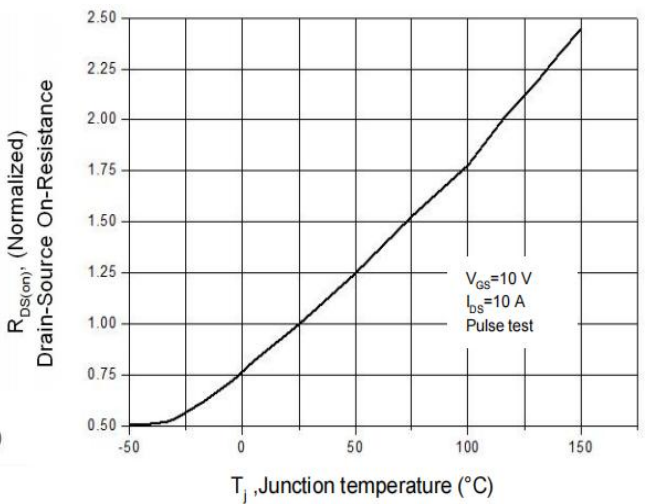
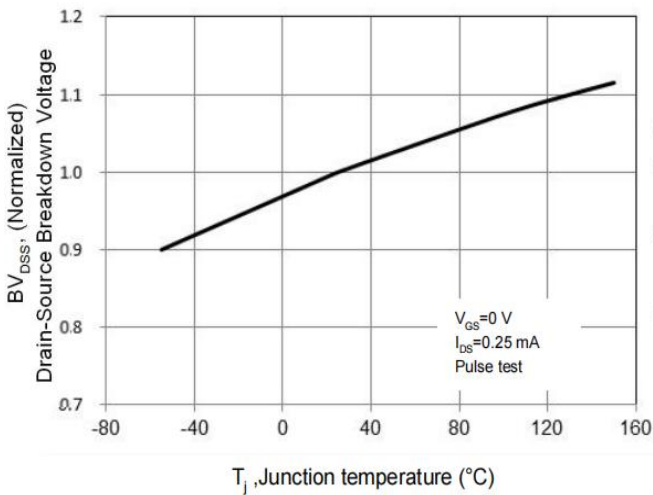
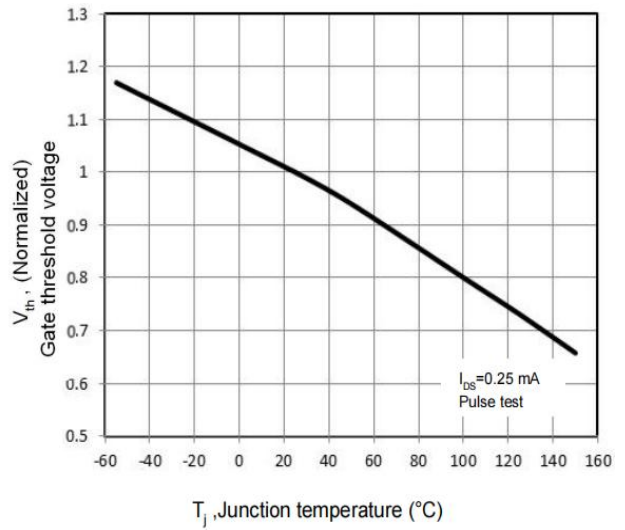
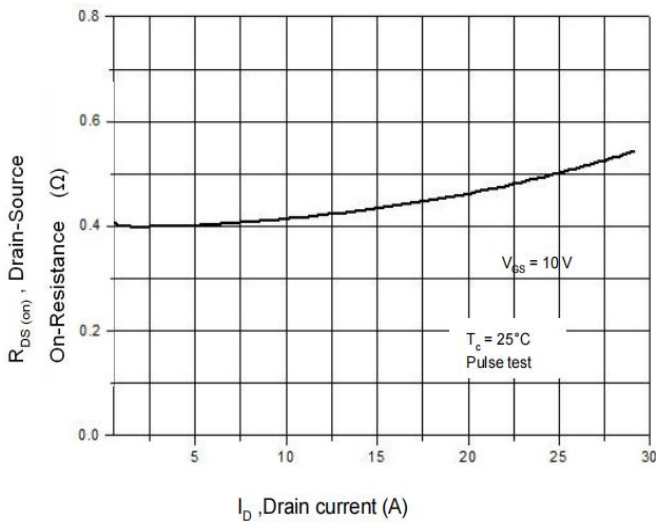
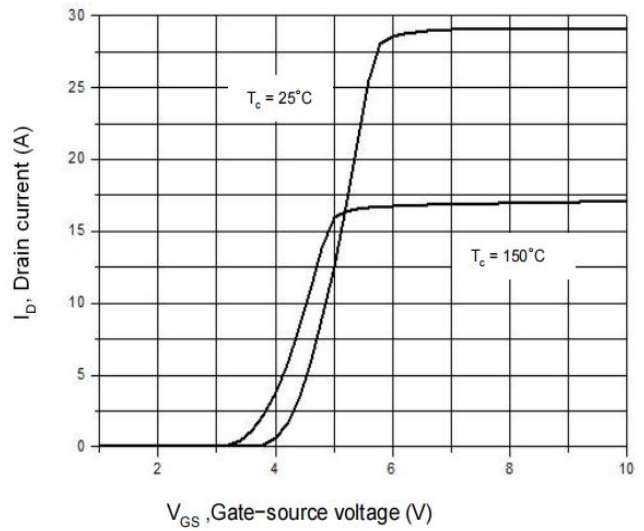
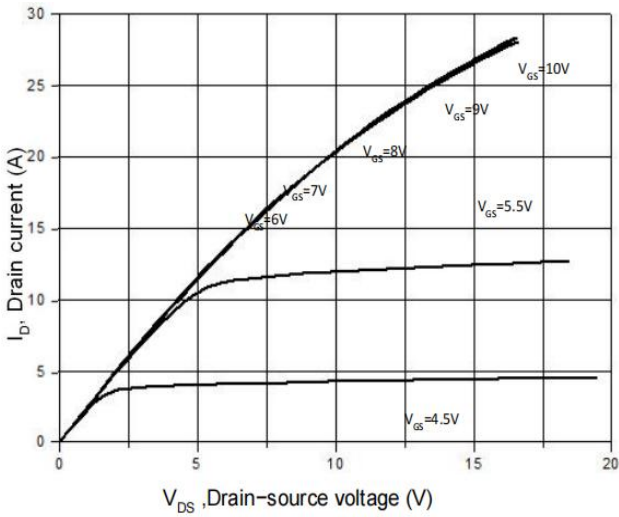
Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0 V, I_D = 250 \mu A$	$BV_{DSS}$	650	-	-	V
Drain-Source Leakage Current	$V_{DS} = 650 V, V_{GS} = 0 V$	$I_{DSS}$	-	-	1	$\mu A$
Gate Leakage Current	$V_{GS} = \pm 30 V, V_{DS} = 0 V$	$I_{GSS}$	-	-	±100	nA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250 \mu A$	$V_{GS(th)}$	2	-	4	V
Drain-Source On-State Resistance	$V_{GS} = 10 V, I_D = 10 A$	$R_{DS(on)}$	-	0.42	0.5	$\Omega$
Forward Transconductance	$V_{DS} = 15 V, I_D = 10 A$	$g_{fs}$	-	18	-	S
Input Capacitance	$V_{GS} = 0 V, V_{DS} = 25 V,$ $f = 1 MHz$	$C_{iss}$	-	2976	-	pF
Output Capacitance		$C_{oss}$	-	270	-	pF
Reverse Transfer Capacitance		$C_{rss}$	-	15.6	-	pF
Turn-on Delay Time(Note2)	$I_D = 20 A, V_{DD} = 325 V,$ $R_G = 10 \Omega$	$t_d(ON)$	-	21.5	-	ns
Rise Time(Note2)		$t_r$	-	43	-	ns
Turn-Off Delay Time(Note2)		$t_d(OFF)$	-	97.5	-	ns
Fall Time(Note2)		$t_f$	-	17.2	-	ns
Total Gate Charge(Note2)	$I_D = 20 A, V_{DD} = 520 V,$ $V_{GS} = 10 V$	$Q_G$	-	57.4	-	nC
Gate to Source Charge(Note2)		$Q_{GS}$	-	16.5	-	nC
Gate to Drain Charge(Note2)		$Q_{GD}$	-	19	-	nC

**Source-Drain Diode Characteristics at Ta=25°C unless otherwise specified**

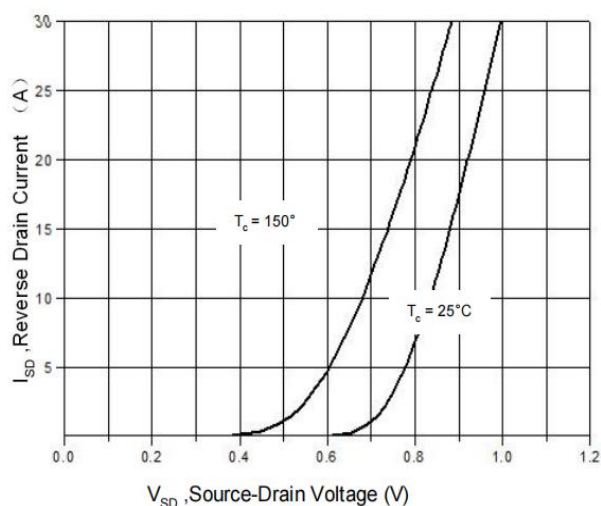
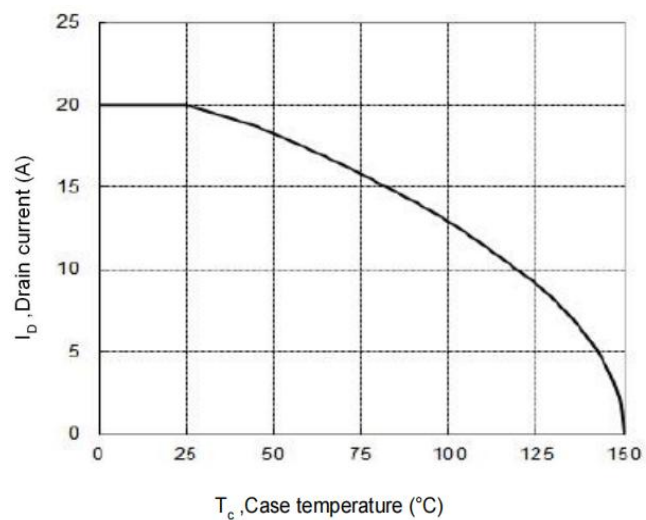
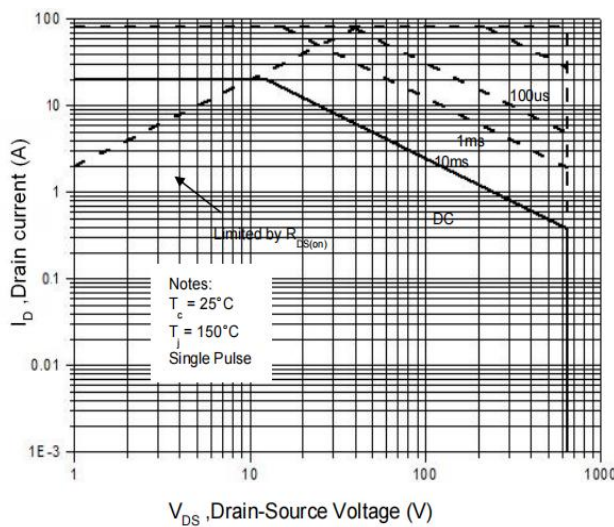
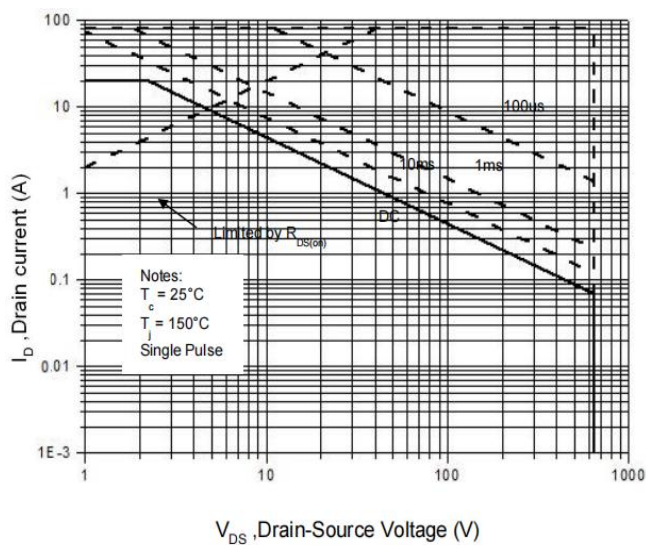
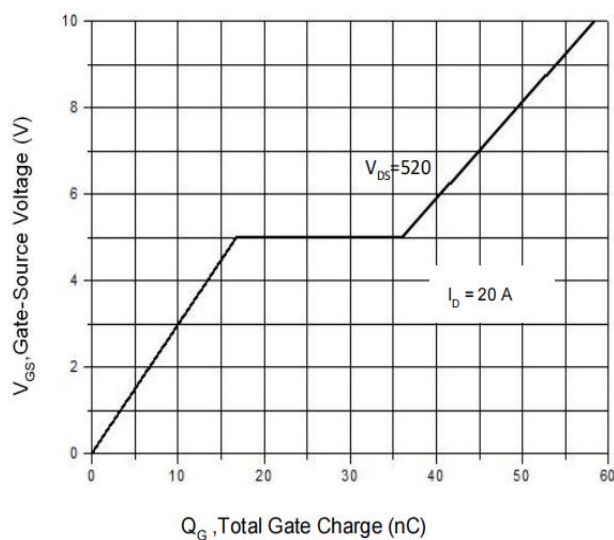
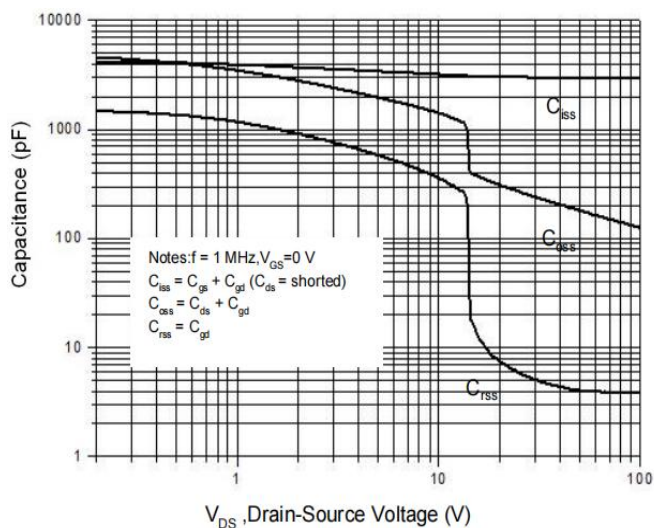
Characteristics	Test Condition	Symbol	Min.	Typ.	Max.	Unit
Maximun Body-Diode Continuous Current		$I_S$	-	-	20	A
Maximun Body-Diode Pulsed Current(Note2)		$I_{SM}$	-	-	80	A
Drain-Source Diode Forward Voltage	$I_{SD} = 20 A$	$V_{SD}$	-	-	1.5	V
Reverse Recovery Time(Note2)	$I_{SD} = 20 A, V_{GS} = 0 V,$	$t_{rr}$	-	492.3	-	ns
Reverse Recovery Charge(Note2)	$dl_F / dt = 100 A/\mu s$	$Q_{rr}$	-	7.6	-	$\mu C$

Note2:Pulse test: 300  $\mu$ s pulse width, 2 % duty cycle

**RATINGS AND CHARACTERISTIC CURVES**

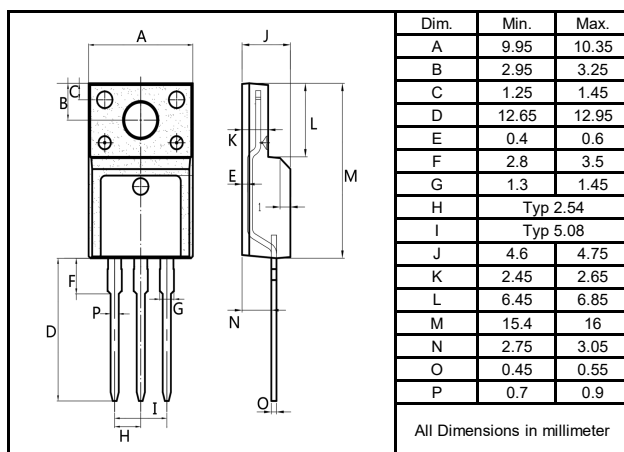


## Package Outline Dimensions millimeters

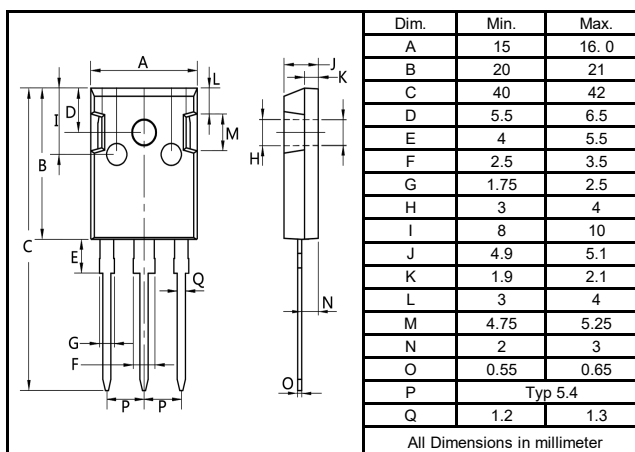


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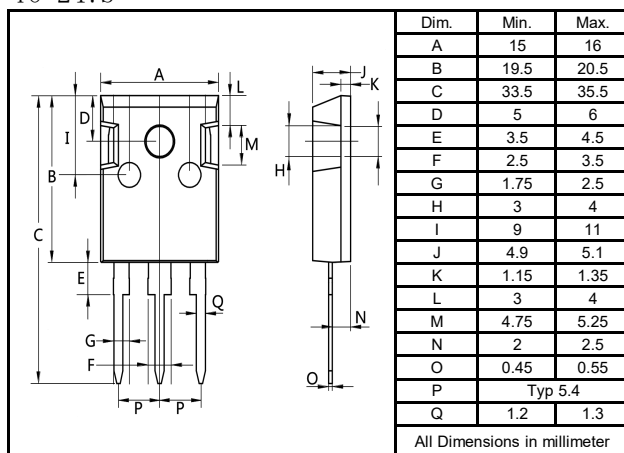
T0-220F



T0-247



T0-247S



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