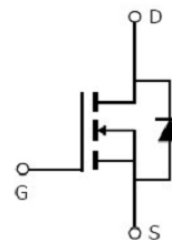


**Main Product Characteristics:**

$V_{DSS}$	600V
$R_{DS(on)}$	0.135Ω(typ.)
$I_D$	20A


**TO220**

**Marking and pin Assignment**

**Schematic diagram**
**Features and Benefits:**

- High dv/dt and avalanche capabilities
- 100% avalanche tested
- Low input capacitance and gate charge
- Low gate input resistance


**Description:**

The SSF26NS60 series MOSFETs is a new technology, which combines an innovative super junction technology and advance process. This new technology achieves low Rdson, energy saving, high reliability and uniformity, superior power density and space saving.

**Absolute max Rating:**

Symbol	Parameter	Max.	Units
$I_D$ @ TC = 25°C	Continuous Drain Current, $V_{GS}$ @ 10V <sup>①</sup>	20	A
$I_D$ @ TC = 100°C	Continuous Drain Current, $V_{GS}$ @ 10V <sup>①</sup>	13	
$I_{DM}$	Pulsed Drain Current <sup>②</sup>	80	
$P_D$ @TC = 25°C	Power Dissipation <sup>③</sup>	208	W
	Linear Derating Factor	1.66	W/°C
$V_{DS}$	Drain-Source Voltage	600	V
$V_{GS}$	Gate-to-Source Voltage	± 30	V
$E_{AS}$	Single Pulse Avalanche Energy @ L=13.8mH	248	mJ
$I_{AS}$	Avalanche Current @ L=13.8mH	6	A
$T_J$ $T_{STG}$	Operating Junction and Storage Temperature Range	-55 to + 150	°C


## Thermal Resistance

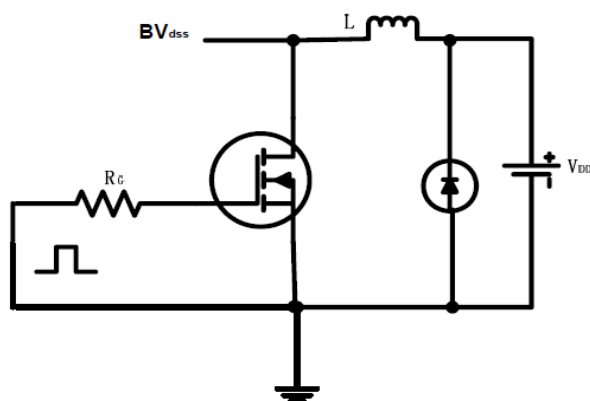
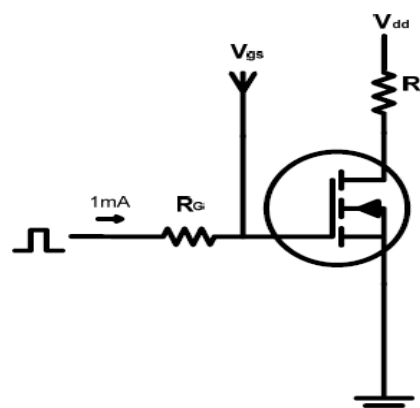
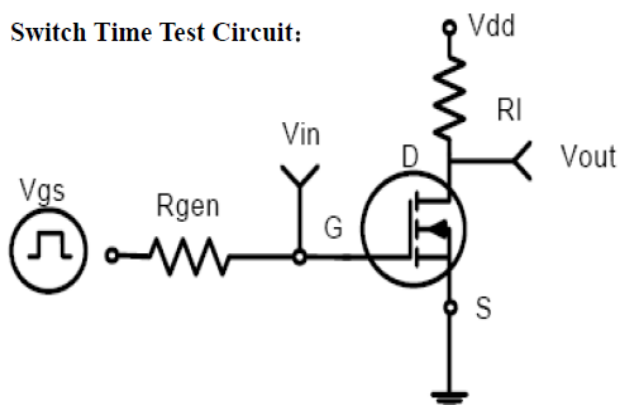
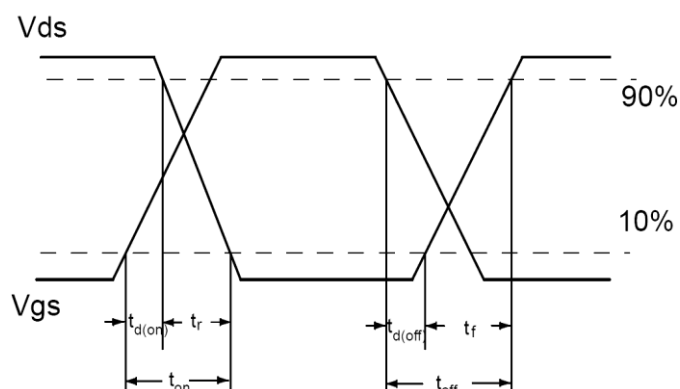
Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case <sup>③</sup>	—	0.6	°C/W
$R_{\theta JA}$	Junction-to-ambient ( $t \leq 10s$ ) <sup>④</sup>	—	62	°C/W

## Electrical Characterizes @ $T_A=25^\circ C$ unless otherwise specified

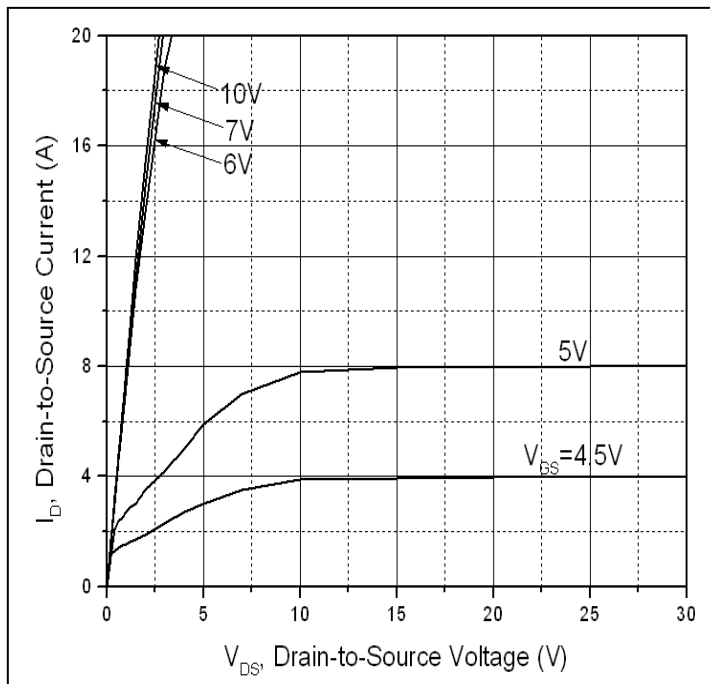
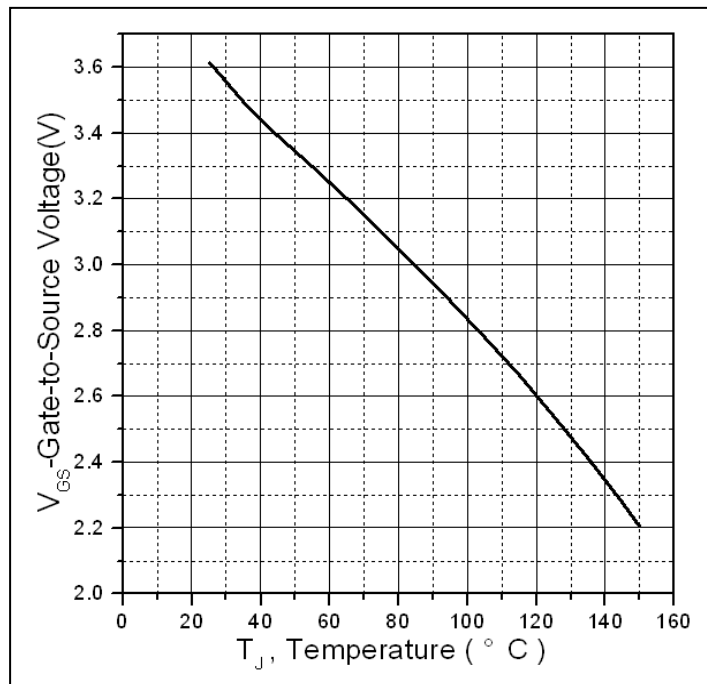
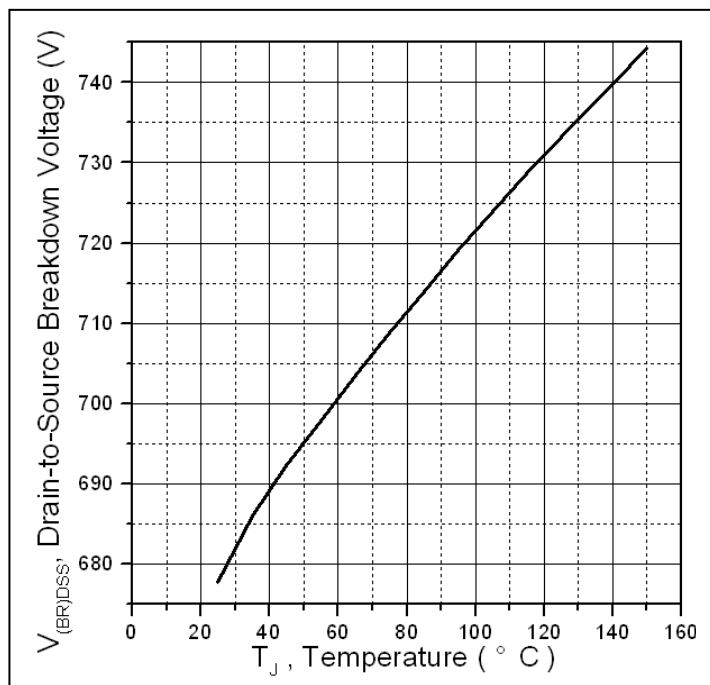
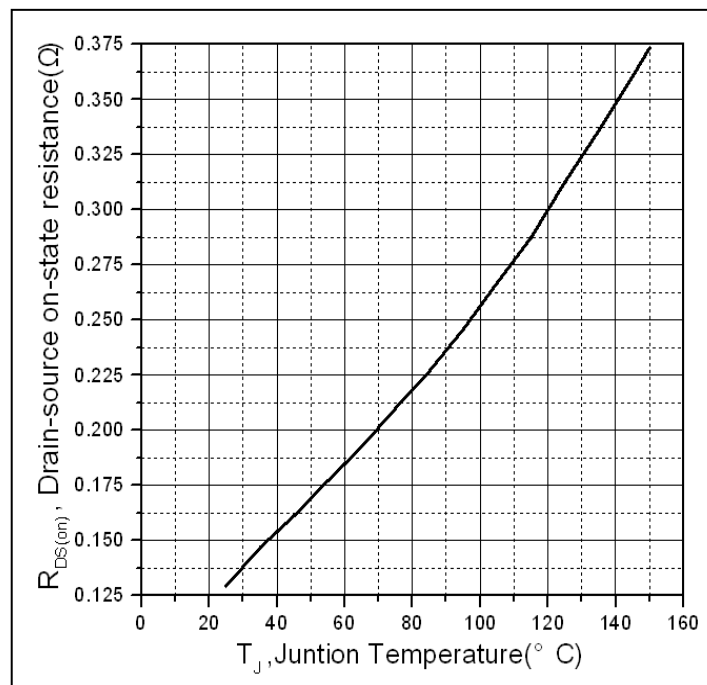
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	600	—	—	V	$V_{GS} = 0V, I_D = 1mA$
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	0.135	0.165	$\Omega$	$V_{GS}=10V, I_D = 10A$
		—	0.31	—		$T_J = 125^\circ C$
$V_{GS(th)}$	Gate threshold voltage	2	—	4	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
		—	2.54	—		$T_J = 125^\circ C$
$I_{DSS}$	Drain-to-Source leakage current	—	—	1	$\mu A$	$V_{DS} = 600V, V_{GS} = 0V$
		—	—	50		$T_J = 125^\circ C$
$I_{GSS}$	Gate-to-Source forward leakage	—	—	100	nA	$V_{GS} = 30V$
		—	—	-100		$V_{GS} = -30V$
$Q_g$	Total gate charge	—	52.1	—	nC	$I_D = 20A,$ $V_{DS}=480V,$ $V_{GS} = 10V$
$Q_{gs}$	Gate-to-Source charge	—	11.2	—		
$Q_{gd}$	Gate-to-Drain("Miller") charge	—	24.9	—		
$t_{d(on)}$	Turn-on delay time	—	15.2	—	nS	$V_{GS}=10V, V_{DS} = 300V,$ $R_L=30\Omega,$ $R_{GEN}=4.7\Omega$ $I_D = 10A$
$t_r$	Rise time	—	18.2	—		
$t_{d(off)}$	Turn-Off delay time	—	46.0	—		
$t_f$	Fall time	—	15.7	—		
$C_{iss}$	Input capacitance	—	1474	—	pF	$V_{GS} = 0V$ $V_{DS} = 50V$ $f = 1MHz$
$C_{oss}$	Output capacitance	—	149	—		
$C_{rss}$	Reverse transfer capacitance	—	4	—		

## Source-Drain Ratings and Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$I_S$	Continuous Source Current (Body Diode)	—	—	20	A	MOSFET symbol showing the integral reverse p-n junction diode. 
$I_{SM}$	Pulsed Source Current (Body Diode)	—	—	80	A	
$V_{SD}$	Diode Forward Voltage	—	0.88	1.3	V	$I_S=20A, V_{GS}=0V$
$t_{rr}$	Reverse Recovery Time	—	370	—	nS	$T_J = 25^\circ C, I_F = 20A, di/dt = 100A/\mu s$
$Q_{rr}$	Reverse Recovery Charge	—	5	—	$\mu C$	

**Test circuits and Waveforms**
**EAS test circuits:**

**Gate charge test circuit:**

**Switch Time Test Circuit:**

**Switch Waveforms:**

**Notes:**

- ① The maximum current rating is limited by bond-wires.
- ② Repetitive rating; pulse width limited by max. junction temperature.
- ③ The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.
- ④ The value of  $R_{\theta JA}$  is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with  $T_A = 25^\circ C$
- ⑤ These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of  $T_{J(MAX)} = 150^\circ C$ .
- ⑥ The maximum current rating is limited by bond-wires.

**Typical electrical and thermal characteristics**

**Figure 1: Typical Output Characteristics**

**Figure 2. Gate to source cut-off voltage**

**Figure 3. Drain-to-Source Breakdown Voltage vs. Temperature**

**Figure 4: Normalized On-Resistance Vs. Case Temperature**

Typical electrical and thermal characteristics

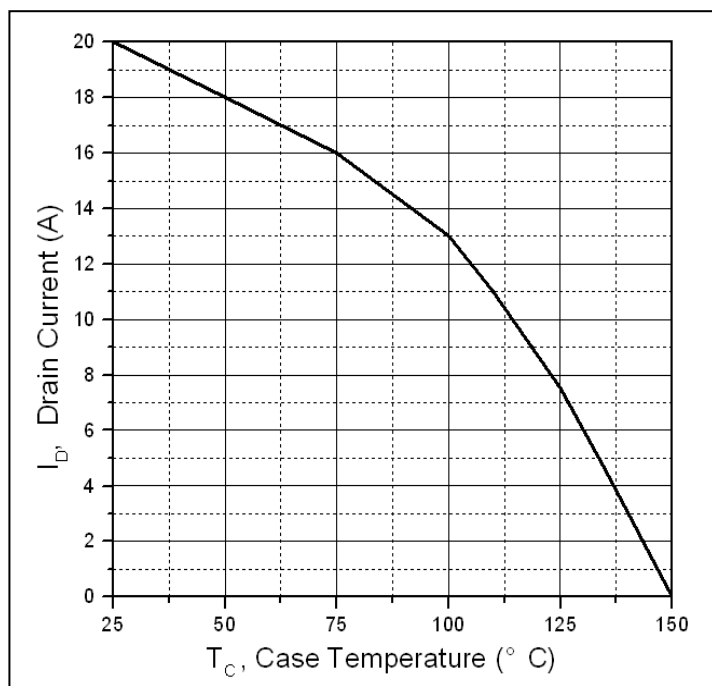


Figure 5. Maximum Drain Current Vs. Case Temperature

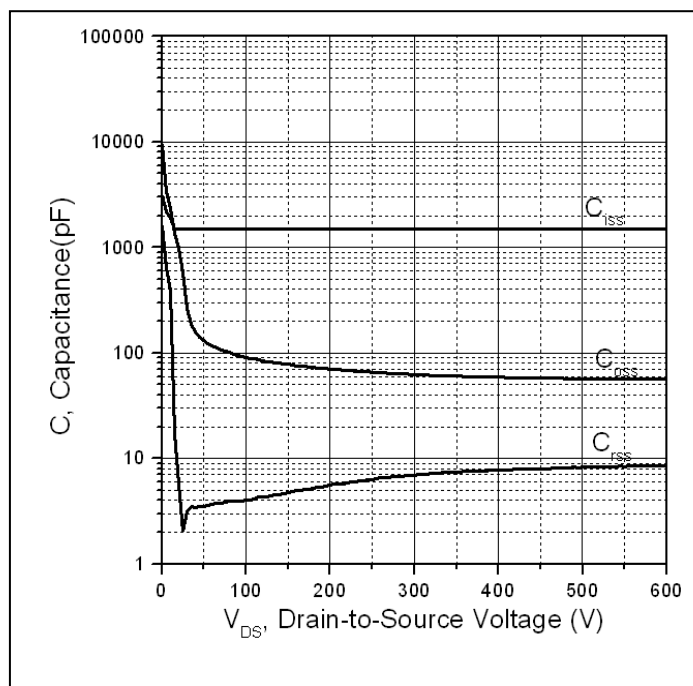
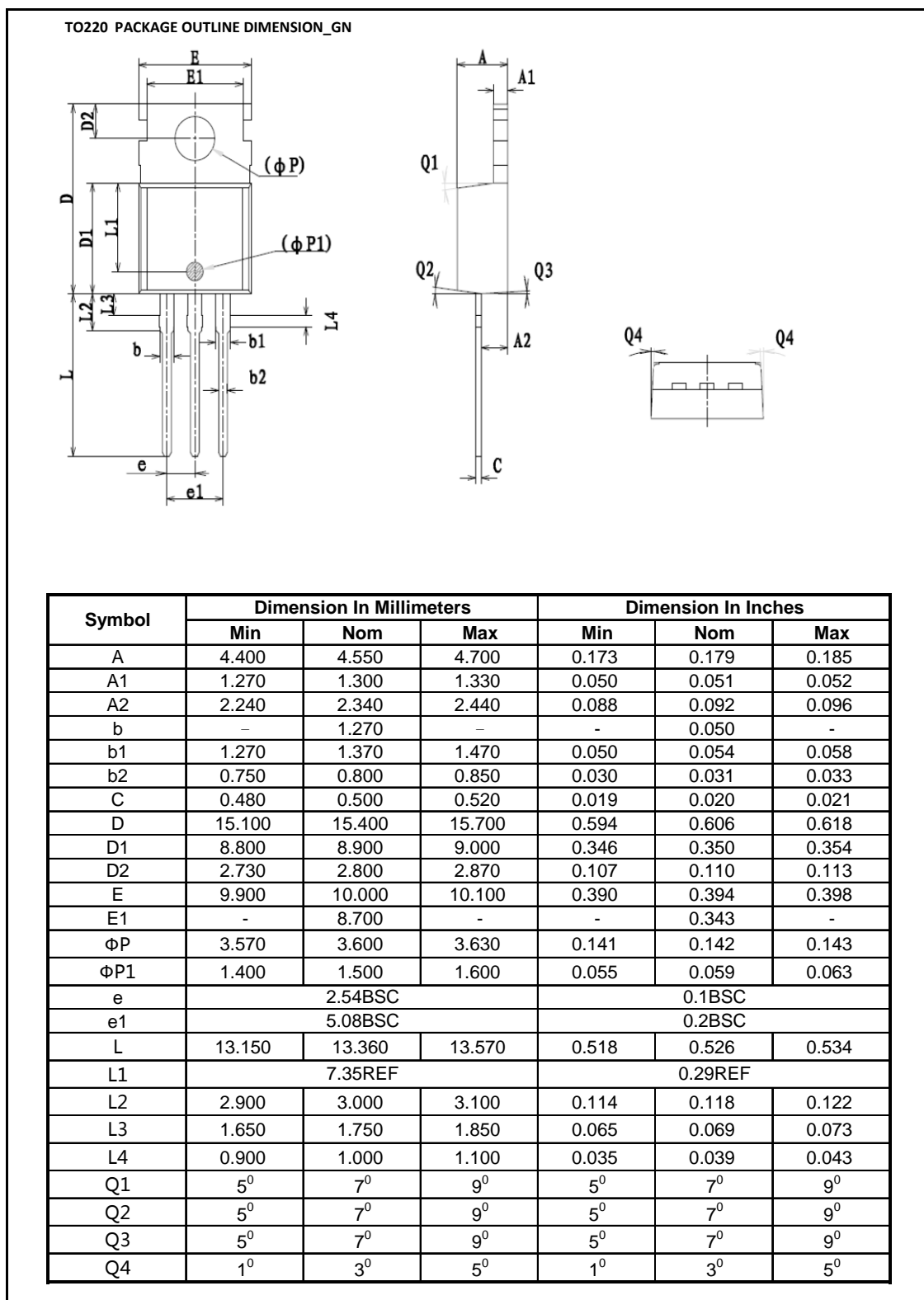


Figure 6. Typical Capacitance Vs. Drain-to-Source Voltage

**Mechanical Data:**


**Ordering and Marking Information**
**Device Marking: SSF26NS60**

**Package (Available)**  
**TO220**  
**Operating Temperature Range**  
**C : -55 to 150 °C**

**Devices per Unit**

Package Type	Units/Tube	Tubes/Inner Box	Units/Inner Box	InnerBoxes/ CartonBox	Units/Carton Box
TO220	50	20	1000	6	6000

**Reliability Test Program**

Test Item	Conditions	Duration	Sample Size
High Temperature Reverse Bias(HTRB)	$T_j=125^{\circ}\text{C}$ to $150^{\circ}\text{C}$ @ 80% of Max $V_{DSS}/V_{CES}/VR$	168 hours 500 hours 1000 hours	3 lots x 77 devices
High Temperature Gate Bias(HTGB)	$T_j=150^{\circ}\text{C}$ @ 100% of Max $V_{GSS}$	168 hours 500 hours 1000 hours	3 lots x 77 devices

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