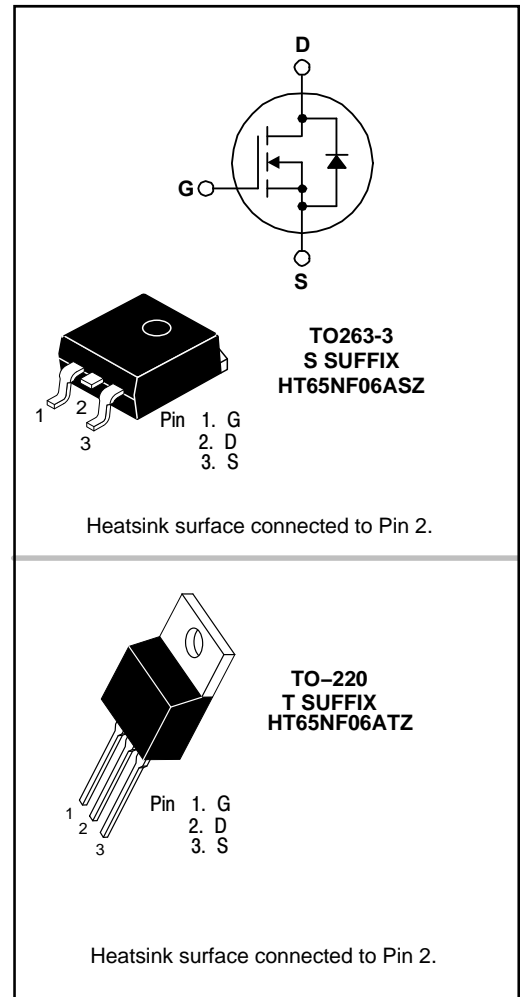


**N-Channel MOSFET**
**Features**

- $R_{DS(on)}$  (Max 0.015  $\Omega$ )@ $V_{GS}=10V$
- Gate Charge (Typical 25nC)
- Maximum Junction Temperature Range (175 °C)


**Absolute Maximum Ratings**

Symbol	Parameter	Value	Units
$V_{DSS}$	Drain to Source Voltage	60	V
$I_D$	Continuous Drain Current(@ $T_C = 25\text{ }^\circ\text{C}$ )	65	A
	Continuous Drain Current(@ $T_C = 100\text{ }^\circ\text{C}$ )	40	A
$I_{DM}$	Drain Current Pulsed	200 <sup>1)</sup>	A
$V_{GS}$	Gate to Source Voltage	$\pm 20$	V
$E_{AS}$	Single Pulsed Avalanche Energy	493 <sup>2)</sup>	mJ
$E_{AR}$	Repetitive Avalanche Energy	12.0 <sup>1)</sup>	mJ
dv/dt	Peak Diode Recovery dv/dt	7.0 <sup>3)</sup>	V/ns
$P_D$	Total Power Dissipation(@ $T_C = 25\text{ }^\circ\text{C}$ )	120	W
	Derating Factor above 25 °C	0.8	W/°C
$T_{STG}$	Operating Junction Temperature	-55 ~ 175	°C
$T_J$	Storage Temperature	150	°C

**Notes**

- 1) Repeativity rating : pulse width limited by junction temperature
- 2)  $L = 230\text{ }\mu\text{H}$ ,  $I_{AS} = 65\text{ A}$ ,  $V_{DD} = 50\text{ V}$ ,  $R_G = 25\text{ }\Omega$ , Starting  $T_J = 25\text{ }^\circ\text{C}$
- 3)  $I_{SD} \leq 55\text{ A}$ ,  $di/dt \leq 300\text{ A}/\mu\text{s}$ ,  $V_{DD} \leq BV_{DSS}$ , Starting  $T_J = 25\text{ }^\circ\text{C}$

**Thermal Characteristics**

Symbol	Parameter	Value			Units
		Min.	Typ.	Max.	
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	-	-	1.24	$^{\circ}C/W$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient*	-	0.5	-	$^{\circ}C/W$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	-	-	62.5	$^{\circ}C/W$

\* When mounted on the minimum pad size recommended (PCB Mount)

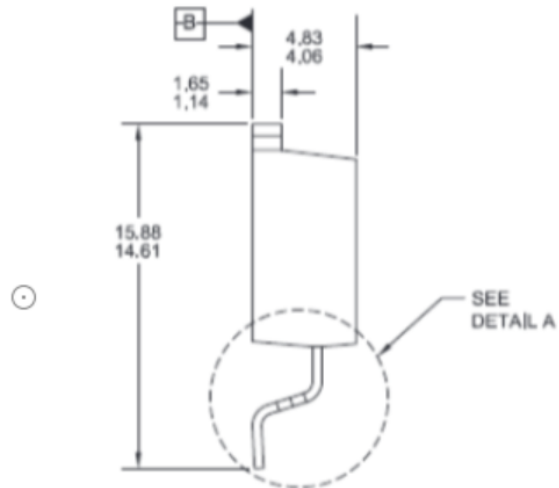
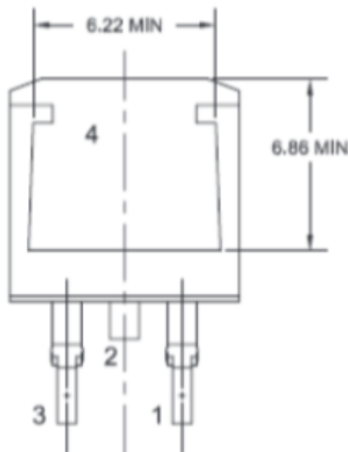
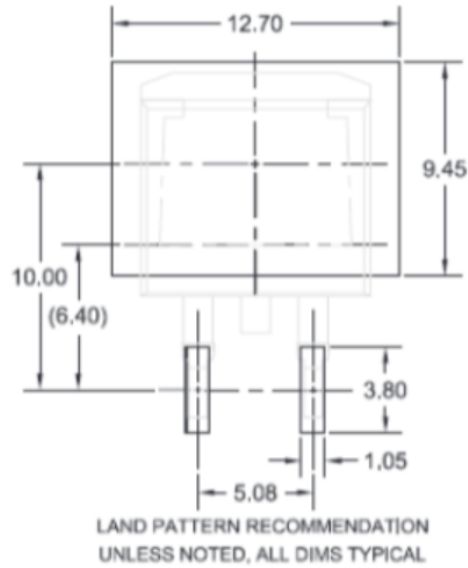
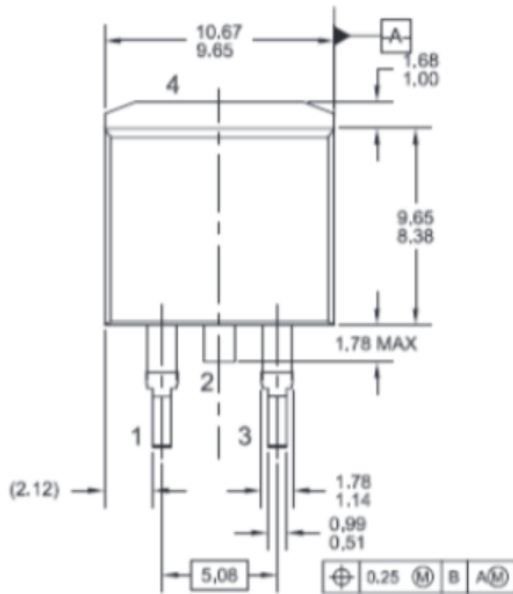
**Source-Drain Diode Characteristics and Maximum Ratings**

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
$I_S$	Maximum Continuous Source-Drain Diode Forward Current		-	-	65	A
$I_{SM}$	Maximum Pulsed Source-Drain Diode Forward Current		-	-	200	
$V_{SD}$	Diode Forward Voltage	$I_S = 60\text{ A}, V_{GS} = 0\text{ V}$	-	-	1.5	V
$t_{rr}$	Reverse Recovery Time	$I_S = 60\text{ A}, V_{GS} = 0\text{ V}, dI_F/dt = 100\text{ A/us}$	-	50	-	ns
$Q_{rr}$	Reverse Recovery Charge		-	70	-	$\mu\text{C}$

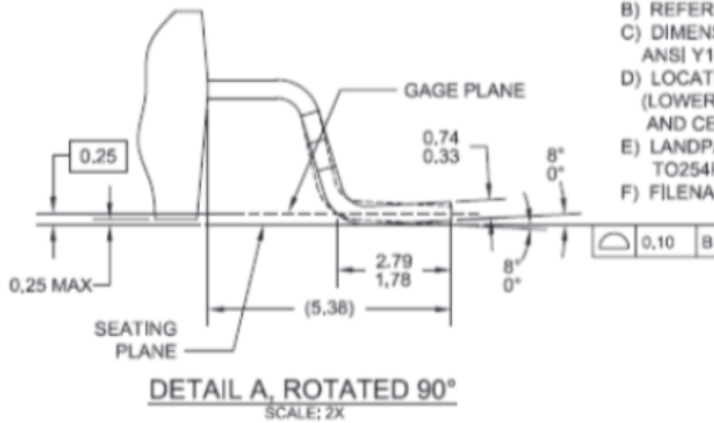
**Electrical Characteristics** (  $T_C = 25\text{ }^\circ\text{C}$  unless otherwise noted )

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
<b>Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}$ , $I_D = 250\text{ }\mu\text{A}$	60	-	-	V
$\Delta BV_{DSS}/\Delta T_J$	Breakdown Voltage Temperature coefficient	$I_D = 250\text{ }\mu\text{A}$ , referenced to $25\text{ }^\circ\text{C}$	-	0.07	-	V/ $^\circ\text{C}$
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS} = 60\text{ V}$ , $V_{GS} = 0\text{ V}$	-	-	10	$\mu\text{A}$
		$V_{DS} = 48\text{ V}$ , $T_C = 125\text{ }^\circ\text{C}$	-	-	100	$\mu\text{A}$
$I_{GSS}$	Gate-Source Leakage, Forward	$V_{GS} = 20\text{ V}$ , $V_{DS} = 0\text{ V}$	-	-	100	nA
	Gate-source Leakage, Reverse	$V_{GS} = -20\text{ V}$ , $V_{DS} = 0\text{ V}$	-	-	-100	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$ , $I_D = 250\text{ }\mu\text{A}$	2.0	-	4.0	V
$R_{DS(ON)}$	Static Drain-Source On-state Resistance	$V_{GS} = 10\text{ V}$ , $I_D = 25.0\text{ A}$	-	-	0.015	$\Omega$
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{GS} = 0\text{ V}$ , $V_{DS} = 25\text{ V}$ , $f = 1\text{ MHz}$	-	1050	1365	pF
$C_{oss}$	Output Capacitance		-	460	600	
$C_{riss}$	Reverse Transfer Capacitance		-	70	90	
<b>Dynamic Characteristics</b>						
$t_{d(on)}$	Turn-on Delay Time	$V_{DD} = 30\text{ V}$ , $I_D = 25.0\text{ A}$ , $R_G = 25\text{ }\Omega$ Pulse Width $\leq 300\mu\text{s}$ , $Q > 50$	-	20	50	ns
$t_r$	Rise Time		-	100	210	
$t_{d(off)}$	Turn-off Delay Time		-	80	170	
$t_f$	Fall Time		-	85	180	
$Q_g$	Total Gate Charge	$V_{DS} = 48\text{ V}$ , $V_{GS} = 10\text{ V}$ , $I_D = 60\text{ A}$	-	32	42	nC
$Q_{gs}$	Gate-Source Charge		-	8	-	
$Q_{gd}$	Gate-Drain Charge(Miller Charge)		-	12	-	

Package Dimensions TO-263-3



- NOTES: UNLESS OTHERWISE SPECIFIED  
 A) ALL DIMENSIONS ARE IN MILLIMETERS.  
 B) REFERENCE JEDEC, TO-263, VARIATION AB.  
 C) DIMENSIONING AND TOLERANCING PER ANSJ Y14.5M - 1994.  
 D) LOCATION OF THE PIN HOLE MAY VARY (LOWER LEFT CORNER, LOWER CENTER AND CENTER OF THE PACKAGE).  
 E) LANDPATTERN RECOMMENDATION PER IPC TO254P1524X482-3N  
 F) FILENAME: TO263A02REV6



Package Dimensions TO-220 AB/3

