

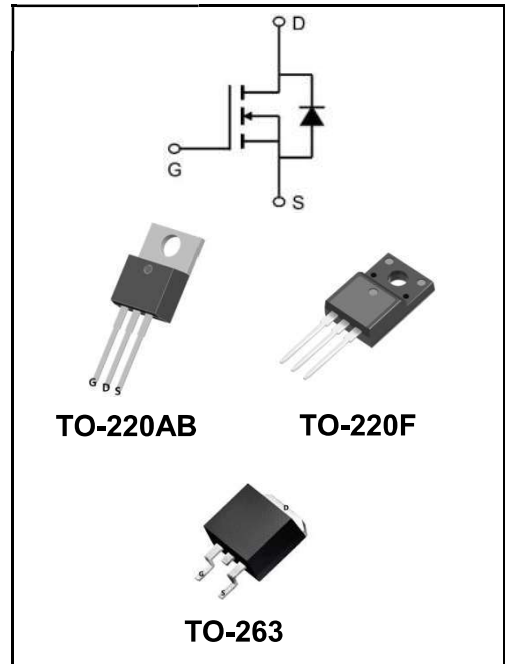
100V N-CHANNEL ENHANCEMENT MODE MOSFET

MAIN CHARACTERISTICS

$I_D$	55A
$V_{DSS}$	100V
$R_{DS(on)-typ}(@V_{GS}=10V)$	< 21mΩ (Type:17 mΩ)

Application

- ◆ Power amplifier
- ◆ motor drive



Product Specification Classification

Part Number	Package	Marking	Pack
YFW55N10AT	TO-220AB	YFW 55N10AT XXXXX	1000PCS/Box
YFW55N10AF	TO-220F	YFW 55N10AF XXXXX	1000PCS/Box
YFW55N10AS	TO-263	YFW 55N10AS XXXXX	800PCS/Reel

Maximum Ratings at Tc=25°C unless otherwise specified

Characteristics	Symbols	Value	Units
Drain-Source Voltage	$V_{DS}$	100	V
Continuous Drain Current	$I_D$	57	A
Pulsed Drain Current	$I_{DM}$	471	A
Gate - Source Voltage	$V_{GS}$	±20	V
Single Pulse Avalanche Energy	$E_{AS}$	1943	mJ
Avalanche Current	$I_{AR}$	32	A
Repetitive Avalanche Energy	$E_{AR}$	36	mJ
Power Dissipation (Tc=25°C)	$P_D$	200	W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to +175	°C
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	0.75	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	°C/W

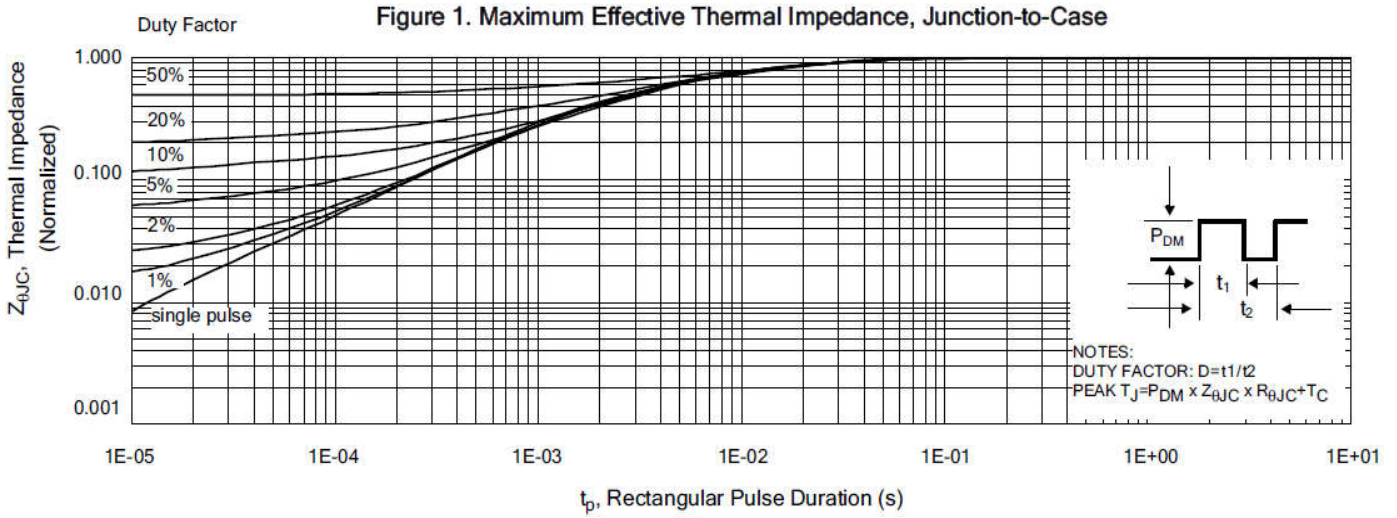
**Maximum Ratings at Tc=25°C unless otherwise specified**

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	<b>V(BR)DSS</b>	100	-	-	<b>V</b>
Zero Gate Voltage Drain Current	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ C$	<b>I<sub>DSS</sub></b>	-	-	1	<b>μA</b>
	$V_{DS}=80V, V_{GS}=0V, T_J=125^\circ C$		-	-	100	
Gate Source Leakage	$V_{GS}=20V, V_{DS}=0V$	<b>I<sub>GSS</sub></b>	-	-	100	<b>nA</b>
	$V_{GS}=-20V, V_{DS}=0V$		-	-	-100	
Gate-Source Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	<b>V<sub>GS(th)</sub></b>	2.0	-	4.0	<b>V</b>
Drain-Source On-Resistance (Note3)	$V_{GS}=10V, I_D=28A$	<b>R<sub>DS(ON)</sub></b>	-	17	2.1	<b>mΩ</b>
Forward Transconductance	$V_{DS}=10V, I_D=28A$	<b>g<sub>fs</sub></b>	-	85		<b>S</b>
Input Capacitance	$V_{DS}=25V$ $V_{GS}=0V$ $f=1.0MHz$	<b>C<sub>iss</sub></b>	-	2700	-	<b>pF</b>
Output Capacitance		<b>C<sub>oss</sub></b>	-	610	-	
Reverse Transfer Capacitance		<b>C<sub>rss</sub></b>	-	260	-	
Total Gate Charge	$V_{DD}=50V$ $I_D=28A$ $V_{DS}=0$ to 10V	<b>Q<sub>g</sub></b>	-	60	-	<b>nC</b>
Gate-Source Charge		<b>Q<sub>gs</sub></b>	-	15	-	
Gate-Drain Charge		<b>Q<sub>gd</sub></b>	-	45	-	
Turn-on delay time	$V_{DD}=50V$ $I_D=28A$ $V_{GS}=10V$ $R_G=2.5\Omega$	<b>t<sub>d(on)</sub></b>	-	20	-	<b>ns</b>
Turn-on Rise Time		<b>T<sub>r</sub></b>	-	28	-	
Turn-Off Delay Time		<b>t<sub>d(OFF)</sub></b>	-	65	-	
Turn-Off Fall Time		<b>t<sub>f</sub></b>	-	15	-	
Continuous Body Diode Current	$T_C=25^\circ C$	<b>I<sub>S</sub></b>	-	-	57	<b>A</b>
Pulsed Diode Forward Current		<b>I<sub>SM</sub></b>	-	-	230	
Body Diode Voltage	$T_J=25^\circ C, I_{SD}=28A, V_{GS}=0V$	<b>V<sub>SD</sub></b>	-	-	1.2	<b>V</b>
Reverse Recovery Time	$V_{GS}=0V, I_S=28A, di/dt=100A/\mu s$	<b>t<sub>rr</sub></b>	-	195	-	<b>ns</b>
Reverse Recovery Charge		<b>Q<sub>rr</sub></b>	-	107	-	<b>nC</b>

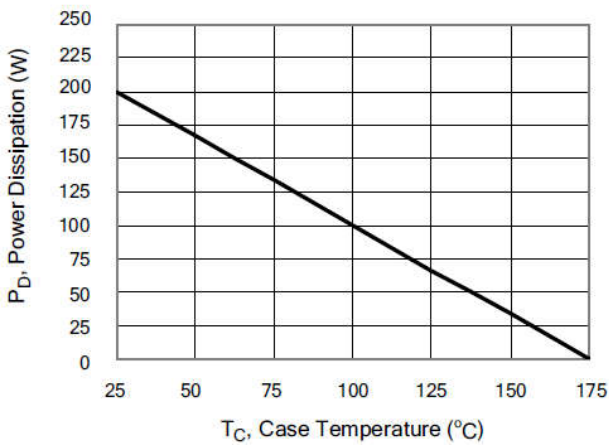
**Notes**

- 1、Repetitive Rating: Pulse width limited by maximum junction temperature
- 2、IAS = 30A, VDD = 50V, RG = 25 Ω, Starting TJ = 25 °C
- 3、Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

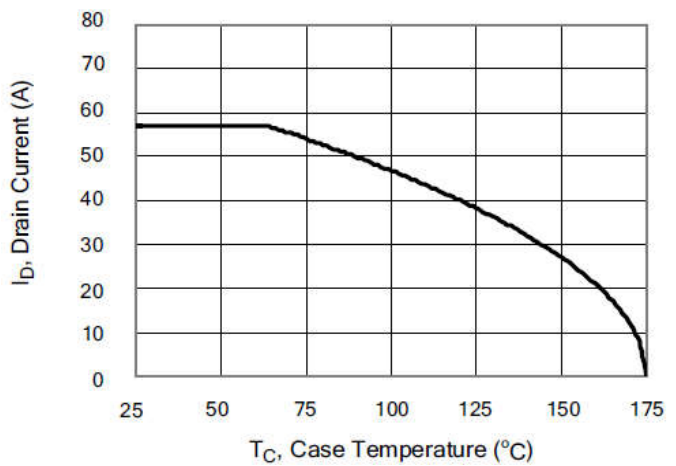
Ratings and Characteristic Curves



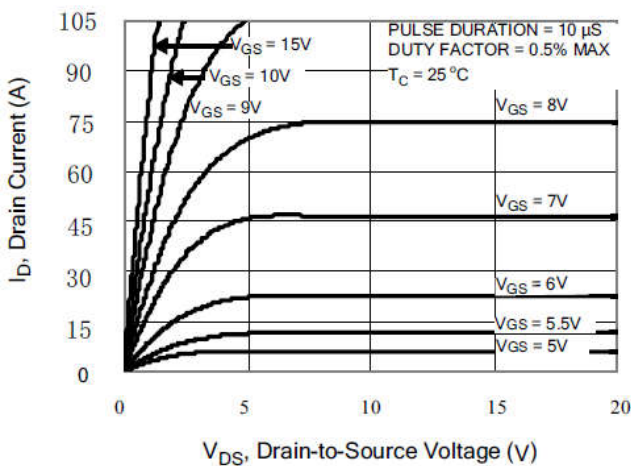
**Figure 2. Maximum Power Dissipation vs Case Temperature**



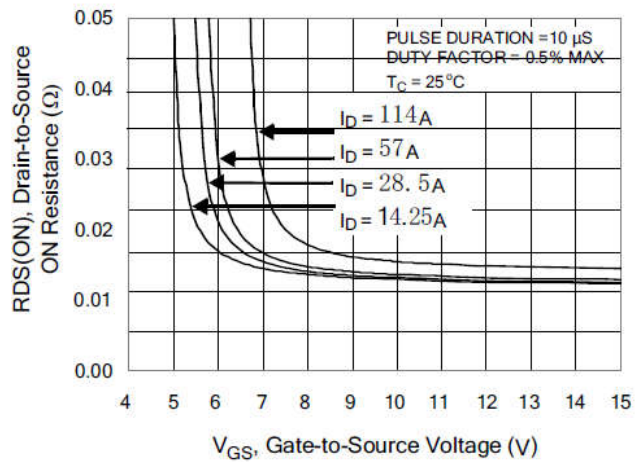
**Figure 3. Maximum Continuous Drain Current vs Case Temperature**



**Figure 4. Typical Output Characteristics**



**Figure 5. Typical Drain-to-Source ON Resistance vs Gate Voltage and Drain Current**



Ratings and Characteristic Curves

Figure 6. Maximum Peak Current Capability

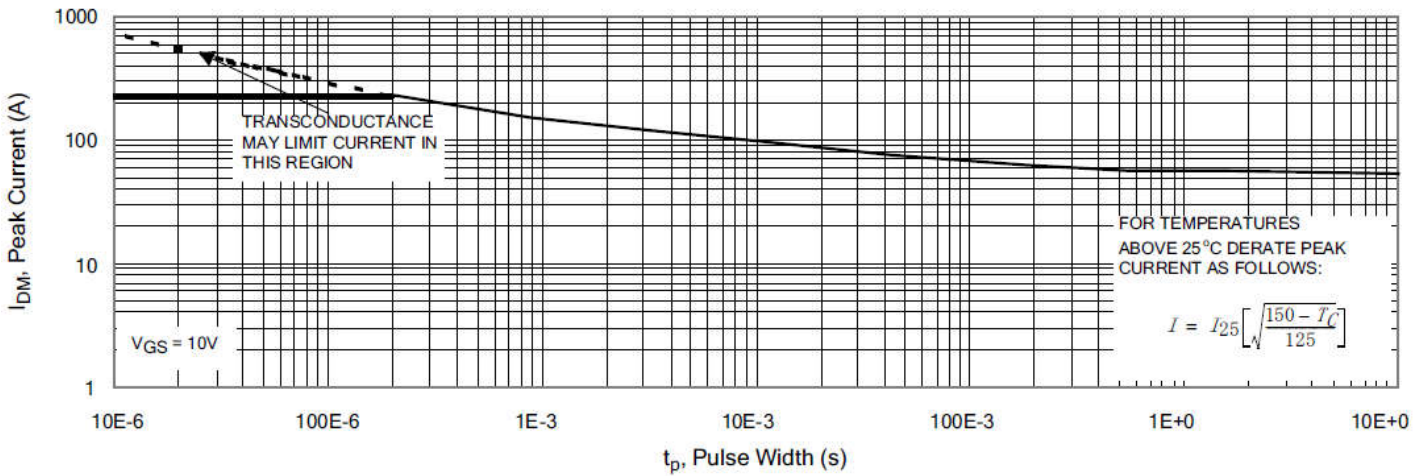


Figure 7. Typical Transfer Characteristics

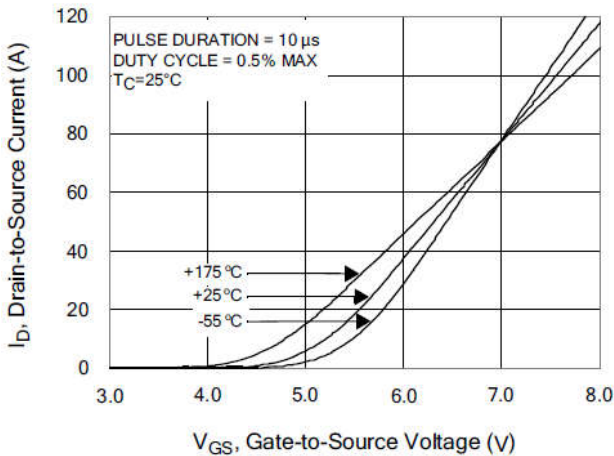


Figure 8. Undamped Inductive Switching Capability

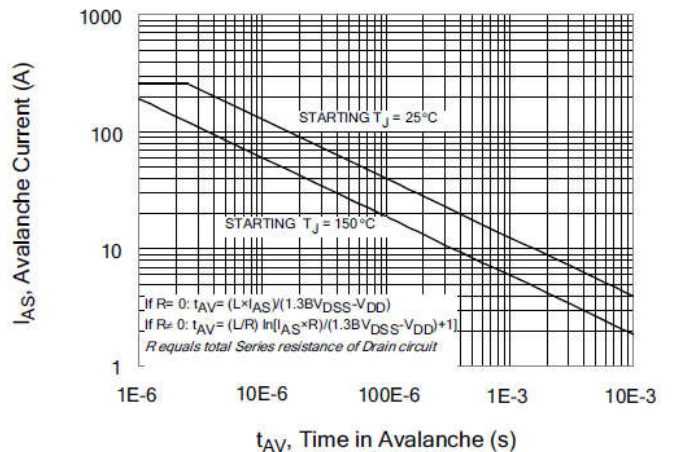


Figure 9. Typical Drain-to-Source ON Resistance vs Drain Current

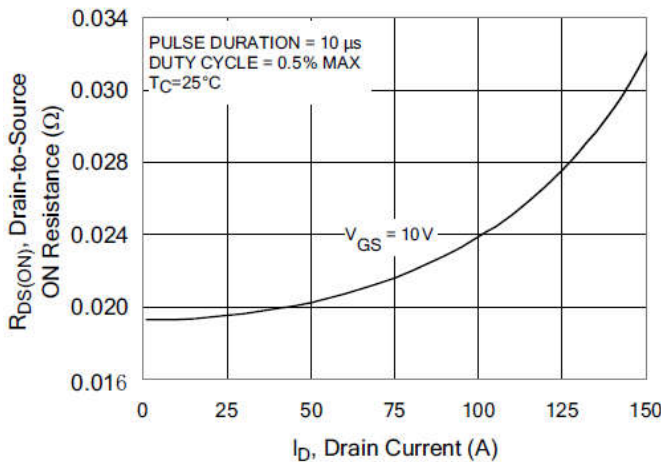
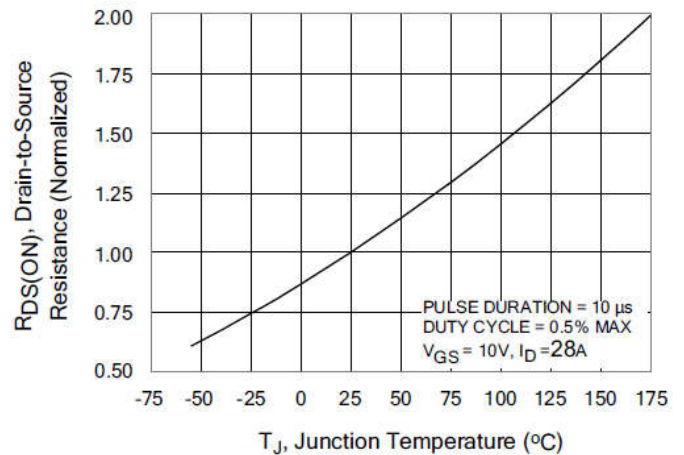


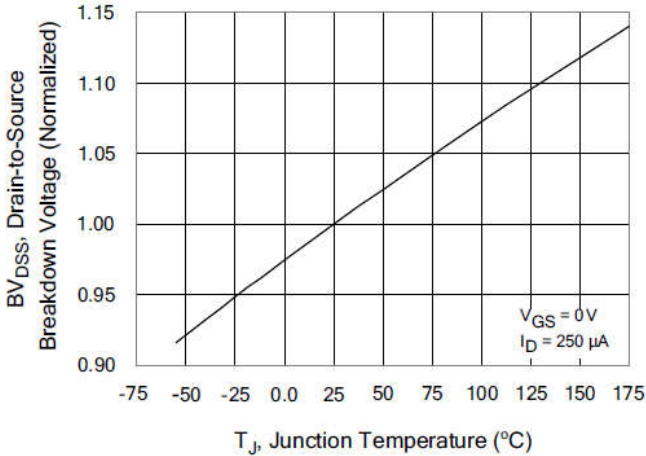
Figure 10. Typical Drain-to-Source ON Resistance vs Junction Temperature



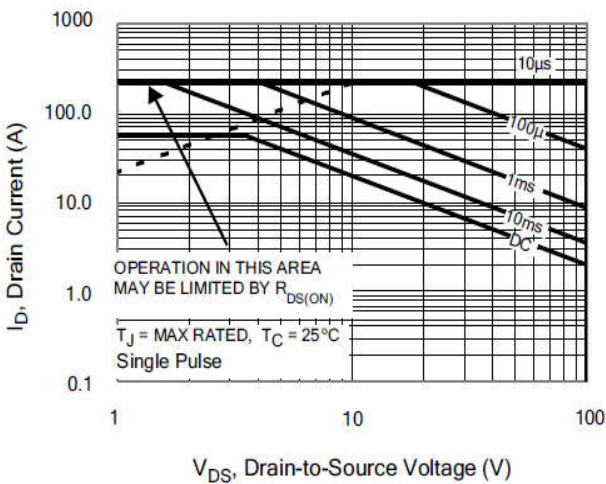


**Ratings and Characteristic Curves**

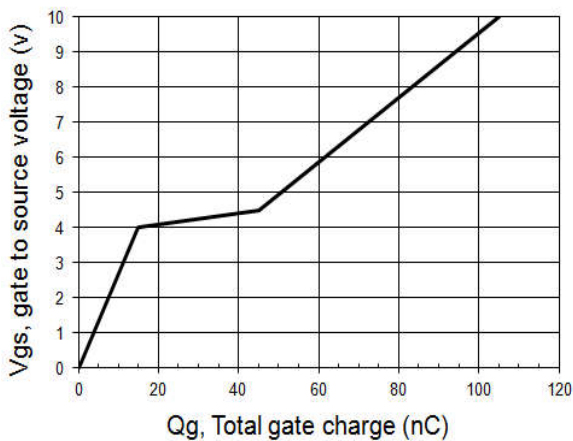
**Figure 11. Typical Breakdown Voltage vs Junction Temperature**



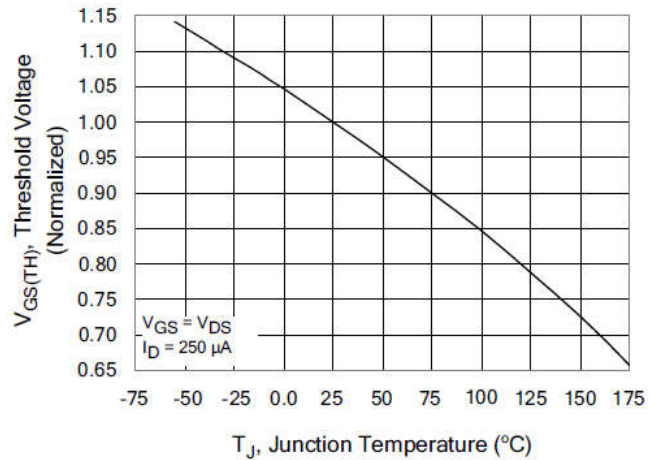
**Figure 13. Maximum Forward Bias Safe Operating Area**



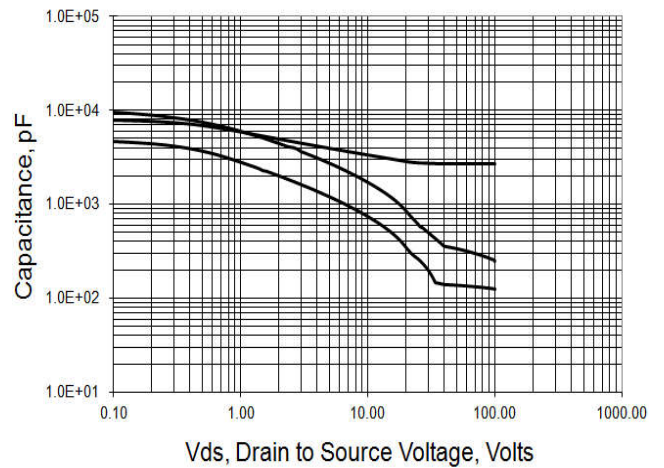
**Figure 15. Typical Gate Charge**



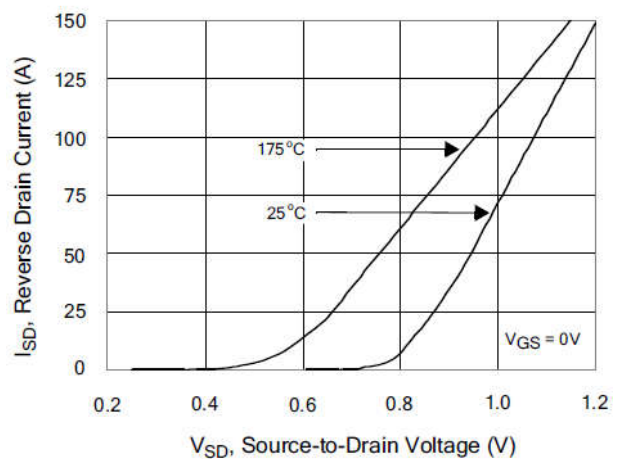
**Figure 12. Typical Threshold Voltage vs Junction Temperature**



**Figure 14. Capacitance vs Vds**



**Figure 16. Typical Body Diode Transfer Characteristics**



Package Outline Dimensions Millimeters

TO-220AB

	Dim.	Min.	Max.
	A	10.15	10.35
	B	2.65	2.95
	C	3.70	3.90
	D	28.5	29.5
	E	1.30	1.45
	F	6.35	6.55
	G	2.9	3.3
	H	15.0	16.0
	I	0.38	0.42
	J	4.45	4.55
	K	1.25	1.35
	L	Typ 5.08	
	M	Typ 2.54	
	N	3.1	3.3
O	0.76	0.84	
All Dimensions in millimeter			

TO-220F

	Dim.	Min.	Max.
	A	9.95	10.25
	B	2.95	3.25
	C	1.25	1.45
	D	12.95	13.25
	E	0.50	0.65
	F	3.1	3.3
	G	1.30	1.45
	H	Typ 2.54	
	I	Typ 5.08	
	J	4.60	4.75
	K	2.50	2.65
	L	6.35	6.55
	M	15.4	16.0
	N	2.75	3.05
O	0.48	0.52	
P	0.76	0.84	
All Dimensions in millimeter			

Package Outline Dimensions Millimeters

TO-263

	Dim.	Min.	Max.
	A	10.1	10.2
	B	7.4	7.6
	C	1.3	1.5
	D	0.55	0.75
	E	5.0	6.0
	F	1.4	1.6
	G	0.78	0.86
	H	1.2	1.3
	I	Typ2.54	
	J	8.4	8.6
	K	4.45	4.55
	L	1.25	1.35
	M	0.02	0.1
	N	2.4	2.8
O	0.36	0.40	
All Dimensions in millimeter			