

100V N-Channel Mosfet

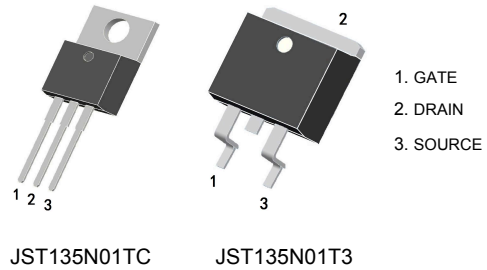
FEATURES

- $R_{DS(ON)} \leq 6.5m\Omega$ (5.2m Ω Typ.)
@ $V_{GS}=10V$
- $R_{DS(ON)} \leq 8.5m\Omega$ (6.9m Ω Typ.)
@ $V_{GS}=4.5V$

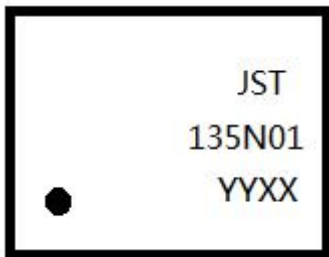
APPLICATIONS

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

TO-220C/TO-263

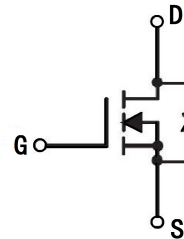


MARKING



YYMM:Date Code(year & month)

N-CHANNEL MOSFET



MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

Symbol	Parameter	Max.	Units
V_{DSS}	Drain-Source Voltage	100	V
V_{GSS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current	135	A
I_{DM}	Pulsed Drain Current	500	A
P_D	Power Dissipation	285	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	1.9	$^{\circ}C/W$
T_J	Junction Temperature	150	$^{\circ}C$
T_{STG}	Storage Temperature Range	-55 to +150	$^{\circ}C$

MOSFET ELECTRICAL CHARACTERISTICS Ta=25 °C unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	100	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 80V,$ $V_{GS} = 0V, T_J = 25^\circ C$	-	-	1	μA
I_{GSS}	Gate to Body Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	2	3	V
$R_{DS(on)}$	Static Drain-Source On-Resistance ^{note1}	$V_{GS} = 10V, I_D = 20A$	-	5.2	6.5	m Ω
		$V_{GS} = 4.5V, I_D = 16A$	-	6.9	8.5	
Dynamic Characteristics ^{note2}						
C_{iss}	Input Capacitance	$V_{DS} = 25V, V_{GS} = 0V,$ $f = 1.0MHz$	-	3403	-	pF
C_{oss}	Output Capacitance		-	1595	-	pF
C_{rss}	Reverse Transfer Capacitance		-	145	-	pF
Q_g	Total gate charge	$V_{DS} = 24V, V_{GS} = 10V$ $I_D = 20A$	-	58	-	nC
Q_{gs}	Gate-source charge		-	10.2	-	nC
Q_{gd}	Gate-drain charge		-	14.1	-	nC
Switching Characteristics ^{note2}						
$t_{d(on)}$	Turn-On Delay Time	$V_{GS} = 10V, V_{DS} = 50V,$ $R_G = 3\Omega, R_L = 2.5\Omega$	-	31	-	ns
t_r	Turn-On Rise Time		-	24	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	45	-	ns
t_f	Turn-Off Fall Time		-	27	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS} = 0V, I_S = 40A$ $T_J = 25^\circ C$	-	0.85	1.2	V

Notes: 1. Pulse Test: Pulse width < 300 μs , Duty Cycle \leq 2%

2. Guaranteed by design, not subject to production

TYPICAL PERFORMANCE CHARACTERISTICS

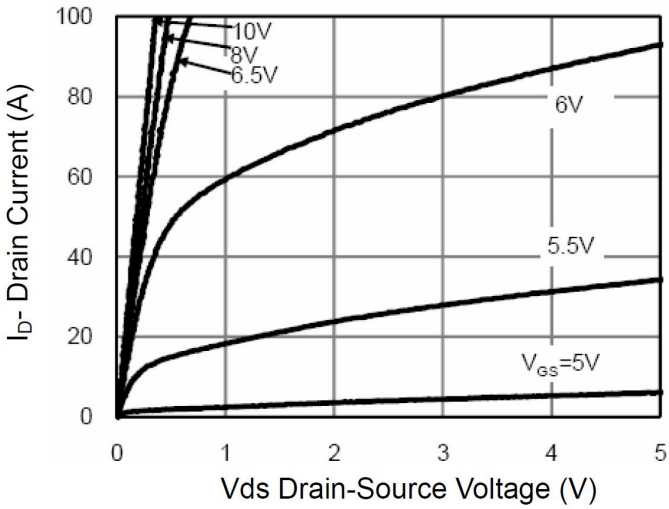


Figure 2 Transfer Characteristics

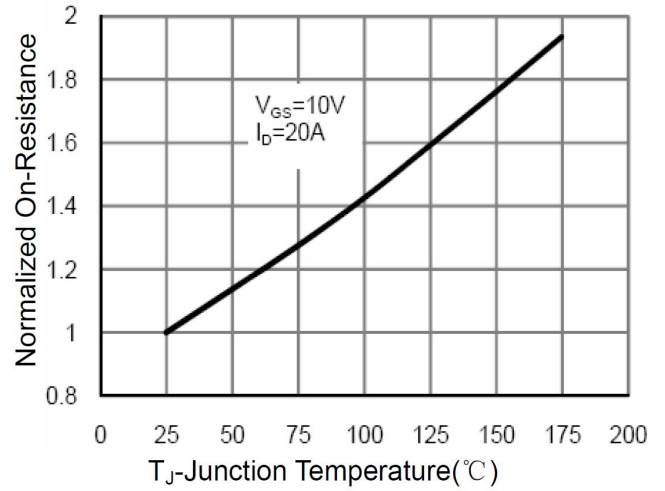


Figure 5 Gate Charge

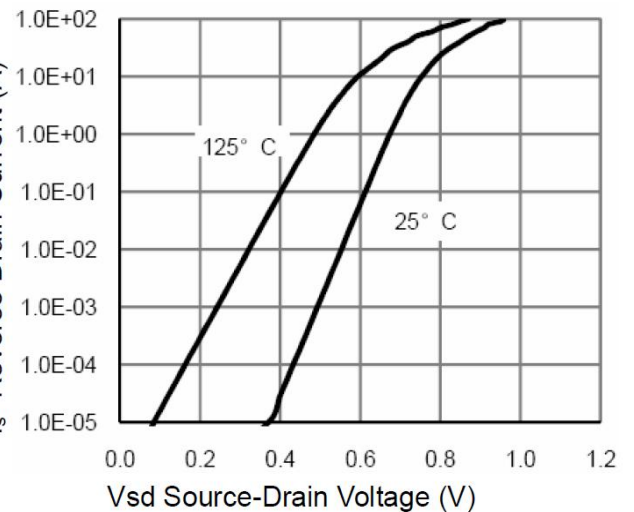
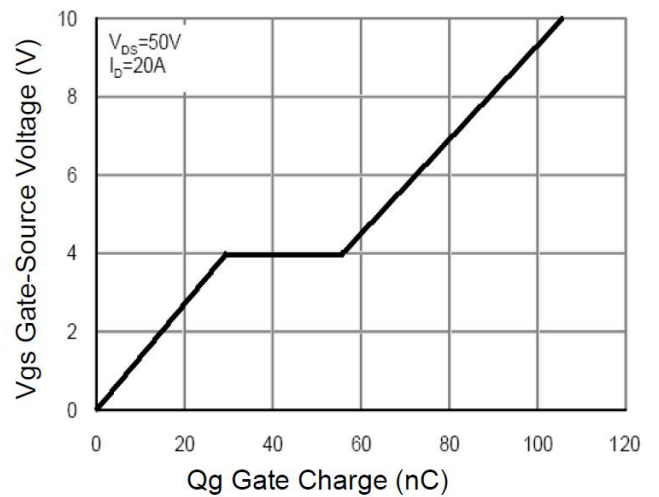


Figure 6 Source- Drain Diode Forward

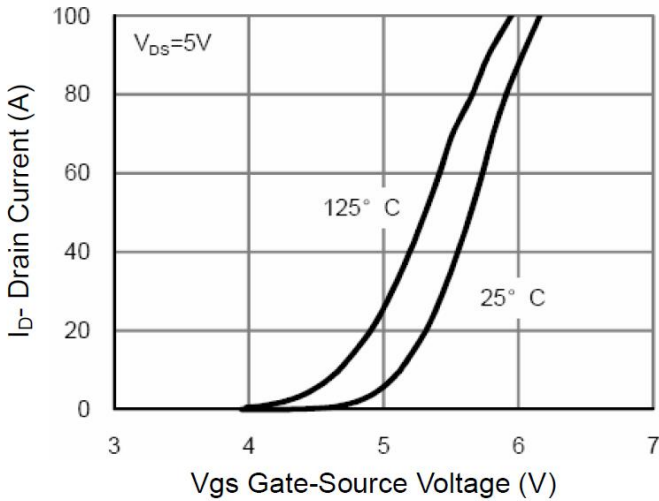


Figure 3 Rdson- Drain Current

TYPICAL PERFORMANCE CHARACTERISTICS (cont.)

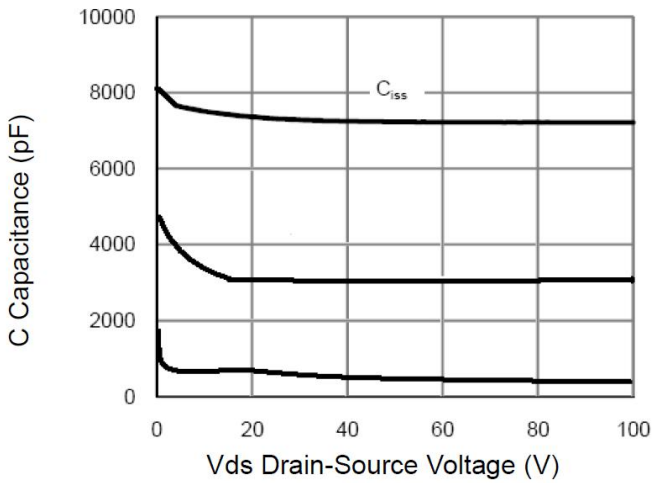


Figure 7 Capacitance vs Vds

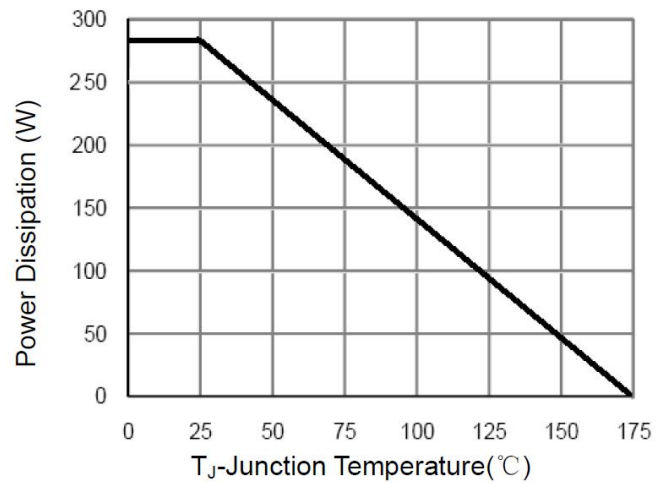


Figure 9 Power De-rating

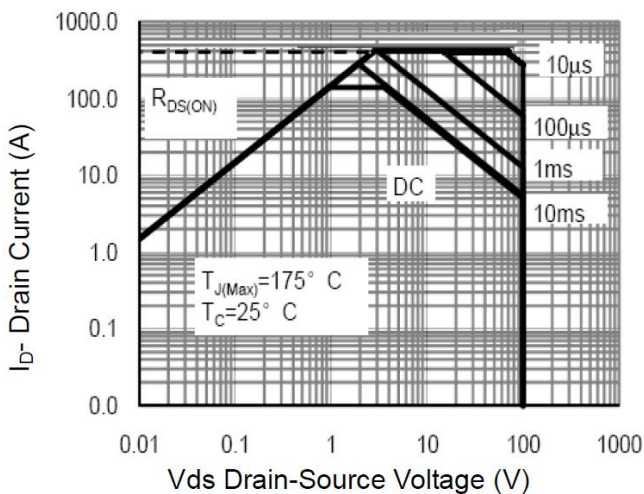


Figure 8 Safe Operation Area

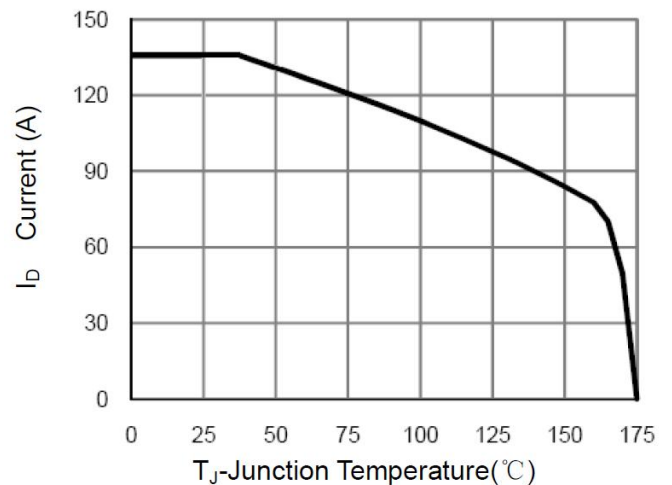


Figure 10 ID Current- Junction Temperature

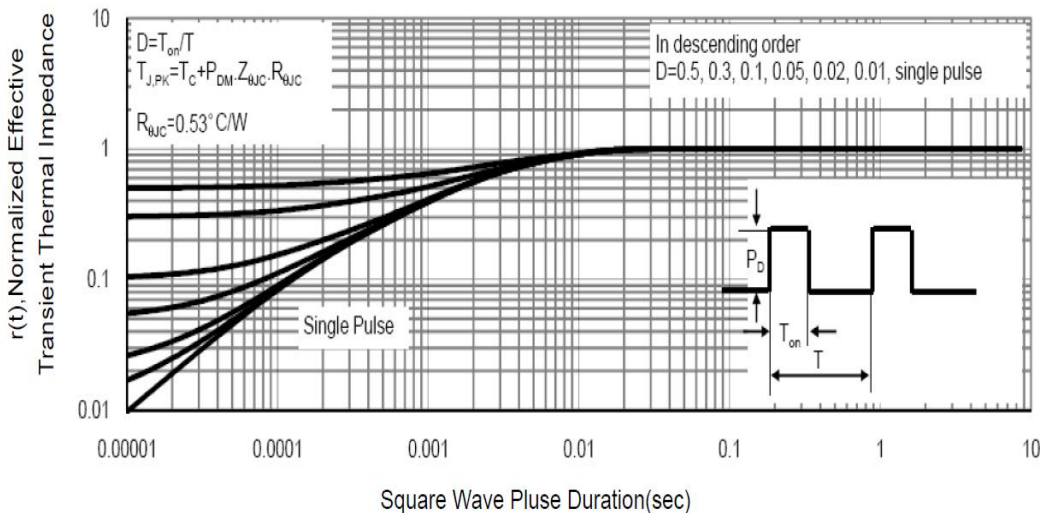
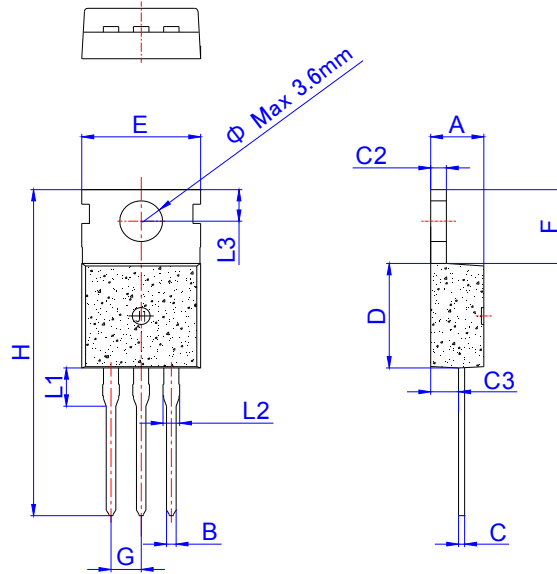


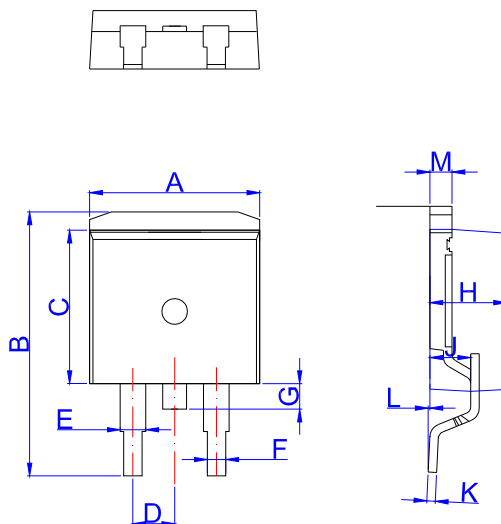
Figure 11 Normalized Maximum Transient Thermal Impedance

TO-220C PACKAGE OUTLINE DRAWING



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		1.181
B	0.70		0.90	0.027		0.035
C	0.45		0.60	0.018		0.024
C2	1.23		1.32	0.048		0.052
C3	2.20		2.60	0.086		0.102
D	8.90		9.90	0.350		0.390
E	9.90		10.3	0.390		0.406
F	6.30		6.90	0.248		0.272
G		2.54			0.1	
H	28.0		29.8	11.0		11.7
L1		3.39			0.133	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
Φ		3.6			0.142	

TO-263 PACKAGE OUTLINE DRAWING



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.90		10.20	0.390		0.402
B	14.70		15.80	0.579		0.622
C	9.4		9.6	0.37		0.378
D		2.54			0.100	
E	1.20		1.40	0.047		0.055
F	0.75		0.85	0.029		0.033
G			1.75			0.069
H	4.40		4.70	0.173		0.185
J	2.30		2.70	0.091		0.106
K	0.38		0.55	0.015		0.022
L	0	0.10	0.25	0	0.004	0.010
M	1.25		1.35	0.049		0.053