

## -60V P-Channel Mosfet

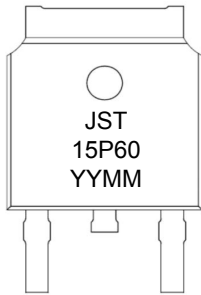
### FEATURES

- $R_{DS(ON)} \leq 92m\Omega$  (73m $\Omega$  Typ.)  
@ $V_{GS}=-10V$
- $R_{DS(ON)} \leq 125m\Omega$  (95m $\Omega$  Typ.)  
@ $V_{GS}=-4.5V$

### APPLICATIONS

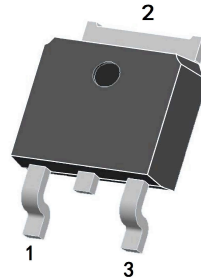
- Power Management in Note book
- DC/DC Converter
- Load Switch
- LCD Display inverter

### MARKING



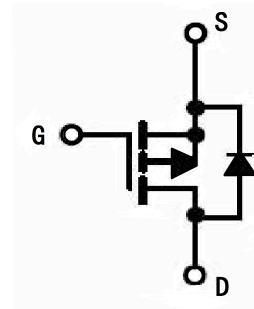
YYMM:Date Code(year &month)

### TO-252-2L



1. GATE
2. DRAIN
3. SOURCE

### P-CHANNEL MOSFET



### MAXIMUM RATINGS (TC=25°C unless otherwise noted)

Symbol	Parameter	Max.	Units
$V_{DSS}$	Drain-Source Voltage	-60	V
$V_{GSS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current	-15	A
$I_{DM}$	Pulsed Drain Current	-60	A
$P_D$	Power Dissipation	35	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	3.5	$^{\circ}C/W$
$T_J$	Junction Temperature	150	$^{\circ}C$
$T_{STG}$	Storage Temperature Range	-55 to +150	$^{\circ}C$

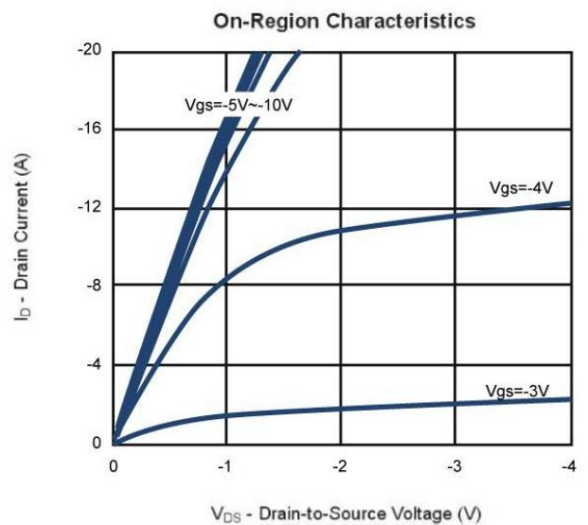
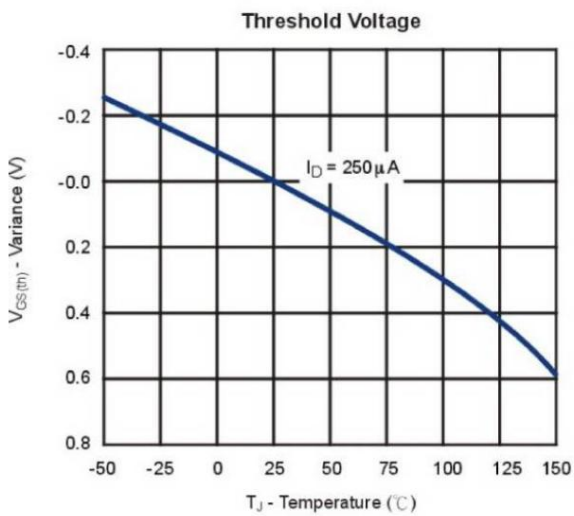
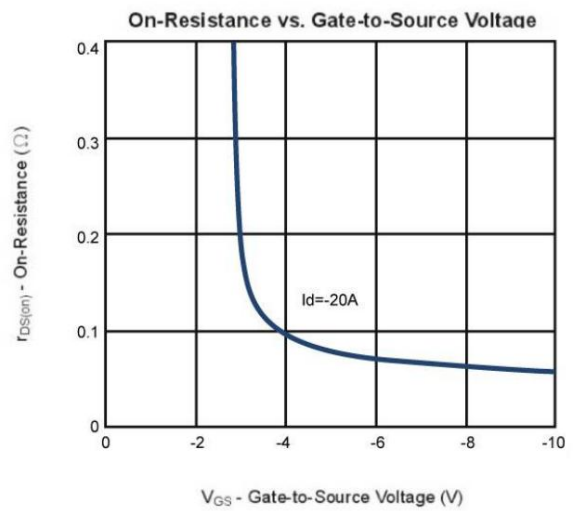
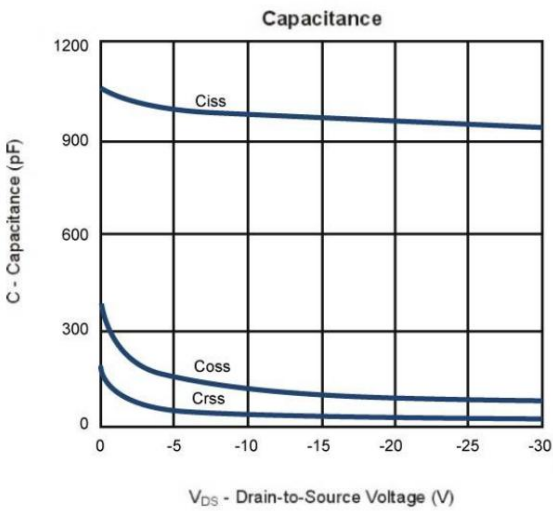
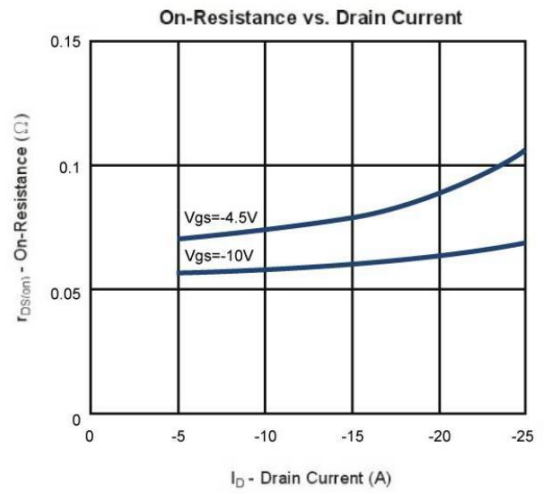
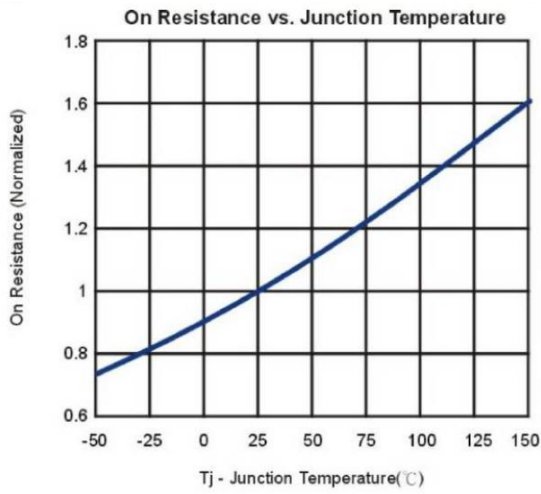
## MOSFET ELECTRICAL CHARACTERISTICS Ta=25 °C unless otherwise specified

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = -250\mu A$	-60	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS} = -48V,$ $V_{GS} = 0V, T_J = 25^\circ C$	-	-	-1	$\mu A$
$I_{GSS}$	Gate to Body Leakage Current	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.3	-1.8	-2.5	V
$R_{DS(on)}$	Static Drain-Source On-Resistance <sup>note1</sup>	$V_{GS} = -10V, I_D = -0.5A$	-	73	92	m $\Omega$
		$V_{GS} = -4.5V, I_D = -0.5A$	-	95	125	m $\Omega$
<b>Dynamic Characteristics</b> <sup>note2</sup>						
$C_{iss}$	Input Capacitance	$V_{DS} = -15V, V_{GS} = 0V$ $f = 1.0MHz$	-	958	-	pF
$C_{oss}$	Output Capacitance		-	100	-	pF
$C_{rss}$	Reverse Transfer Capacitance		-	33	-	pF
$Q_g$	Total Gate Charge	$V_{DS} = -30V, I_D = -20A,$ $V_{GS} = -4.5V,$	-	10	-	nC
$Q_{gs}$	Gate-Source Charge		-	6.3	-	nC
$Q_{gd}$	Gate-Drain("Miller") Charge		-	2.5	-	nC
<b>Switching Characteristics</b> <sup>note2</sup>						
$t_{d(on)}$	Turn-On Delay Time	$V_{GS} = -10V, V_{DS} = -15V$ $R_G = 3\Omega, I_D = -1A$ $R_L = 15\Omega$	-	36	-	ns
$t_r$	Turn-On Rise Time		-	16	-	ns
$t_{d(off)}$	Turn-Off Delay Time		-	53	-	ns
$t_f$	Turn-Off Fall Time		-	6	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
$V_{SD}$	Drain to Source Diode Forward Voltage	$V_{GS} = 0V, I_S = -0.5A$ $T_J = 25^\circ C$	-	-0.7	-1.3	V

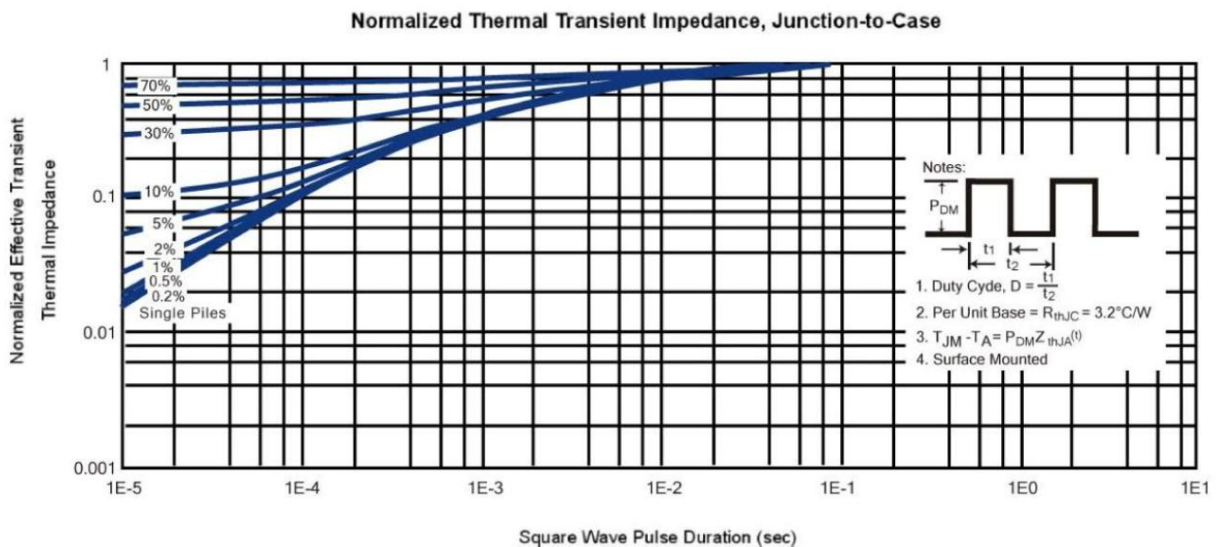
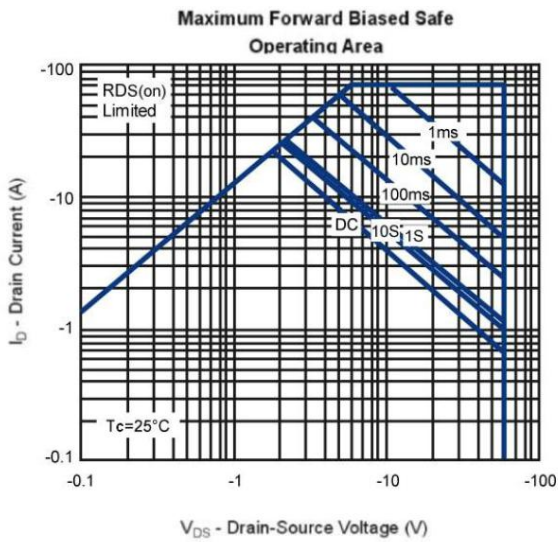
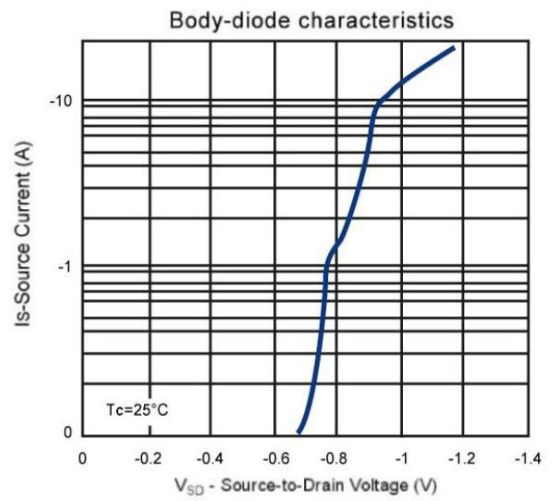
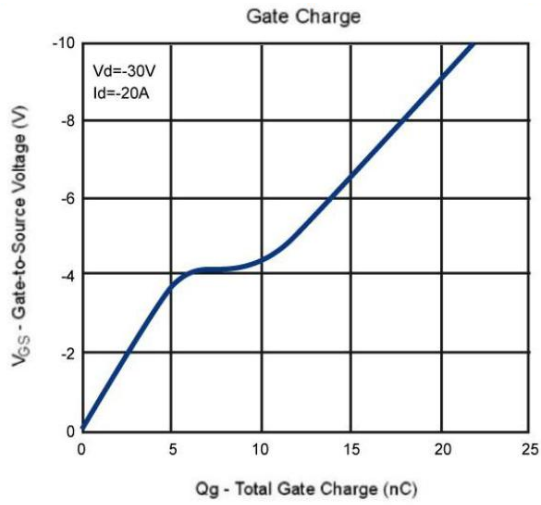
Notes: 1. Pulse Test: Pulse width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$

2. Guaranteed by design, not subject to production testing.

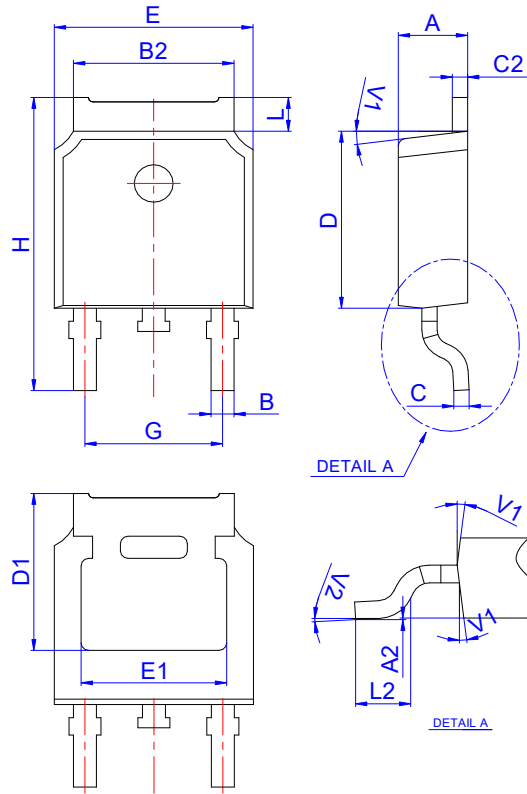
## TYPICAL PERFORMANCE CHARACTERISTICS



## TYPICAL PERFORMANCE CHARACTERISTICS (cont.)



TO-252-2L PACKAGE OUTLINE DRAWING



Symbols	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°