
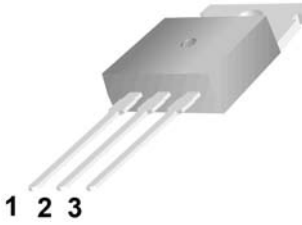
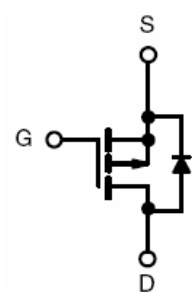


<p style="font-size: 1.2em; margin: 0;">60P06</p> <p>60V P-Channel MOSFET</p> <p>Features:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Low Intrinsic Capacitances. <input type="checkbox"/> Excellent Switching Characteristics. <input type="checkbox"/> Extended Safe Operating Area. <input type="checkbox"/> Unrivalled Gate Charge :Qg= 98.6nC (Typ.). <input type="checkbox"/> BVDSS=-60V, I_D=-60A <input type="checkbox"/> R_{DS(on)} : 19mΩ (Max) @V_G=10V <input type="checkbox"/> 100% Avalanche Tested 	<div style="text-align: right; margin-bottom: 10px;">  </div> <p style="text-align: center; margin: 0;">TO-220</p>   <div style="margin-left: 100px;"> <p>1. Gate (G)</p> <p>2. Drain (D)</p> <p>3. Source (S)</p> </div>
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Absolute Maximum Ratings (T_c=25°C Unless Otherwise Noted)

Parameter	Symbol	Maximum Ratings	Unit
Drain-Source Voltage	V _{DS}	-60	V
Gate-Source Voltage	V _{GS}	±20	V
Continuous Drain Current*	I _D	T _c =25°C	-60
		T _c =70°C	-46.3
Pulsed Drain Current	I _{DM}	-221	A
Maximum Power Dissipation*	P _D	T _c =25°C	90.9
		T _c =70°C	63.6
Operating Junction Temperature	T _J	-55 to 175	°C
Thermal Resistance-Junction to Case*	R _{θJC}	1.65	°C/W

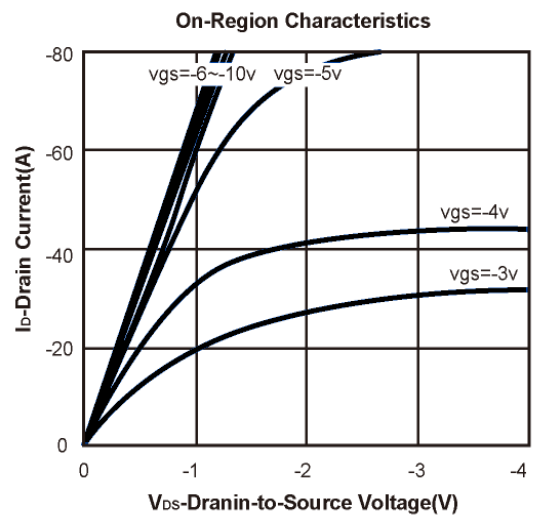
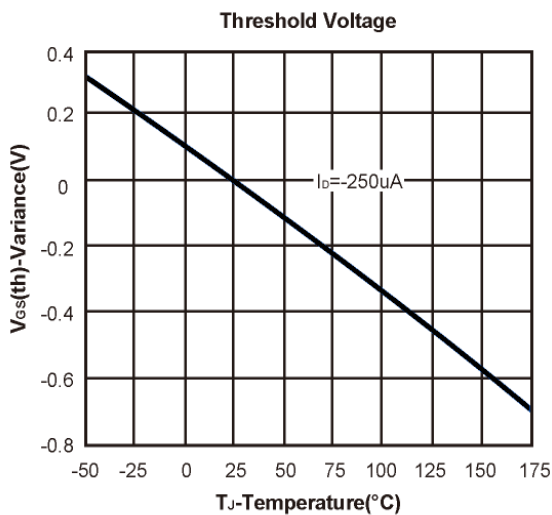
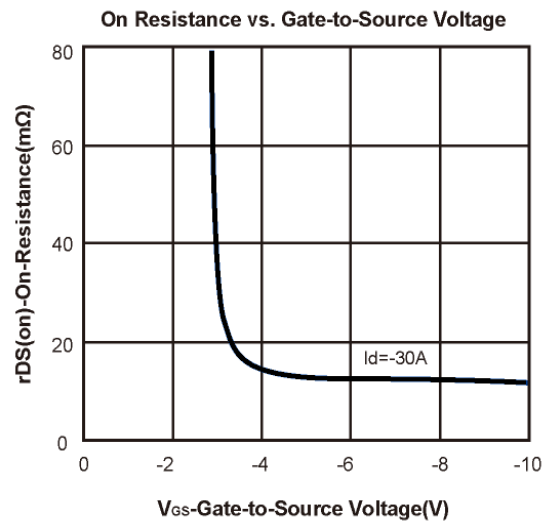
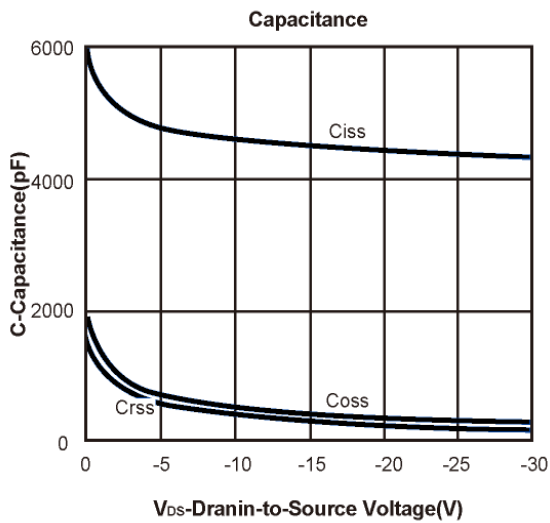
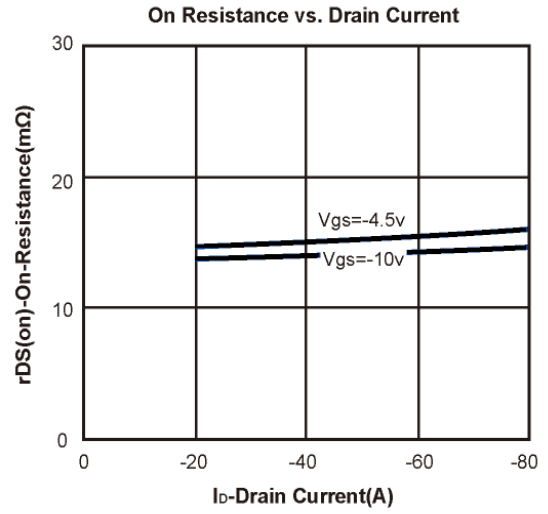
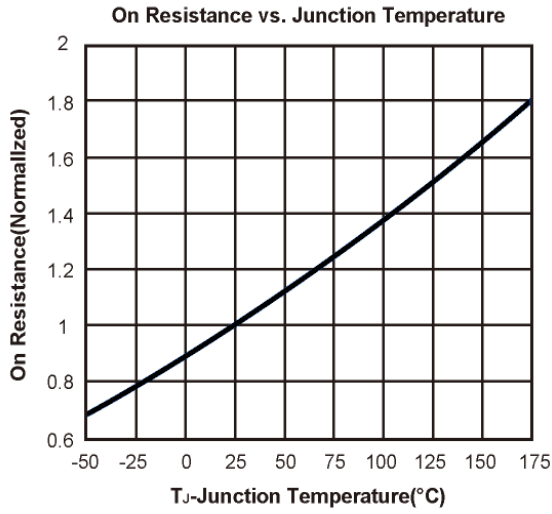
*The device mounted on 1in² FR4 board with 2 oz copper

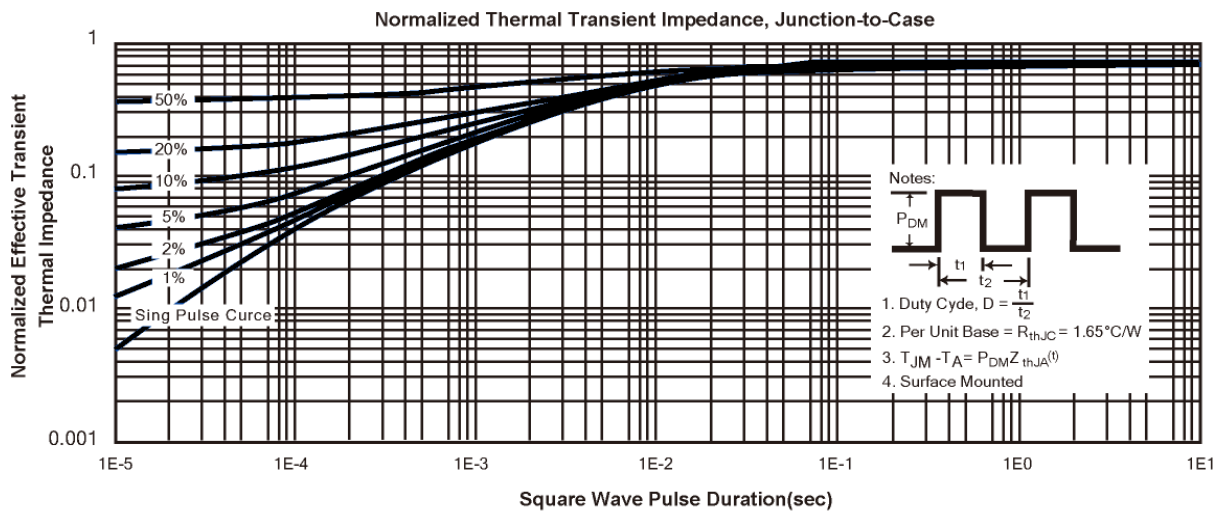
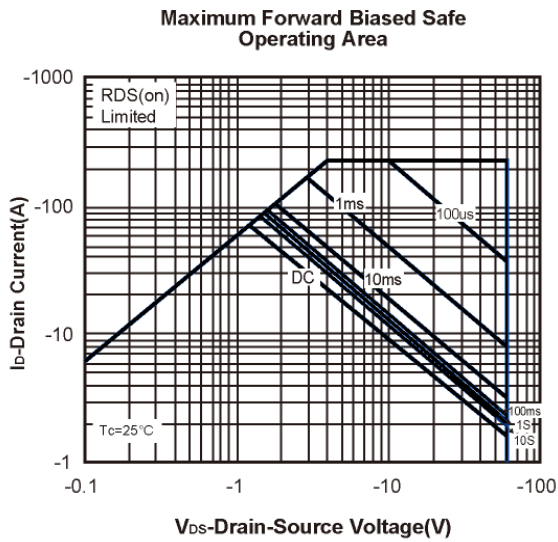
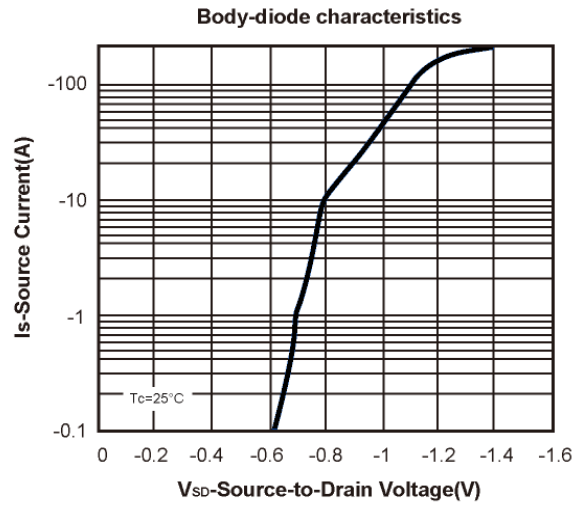
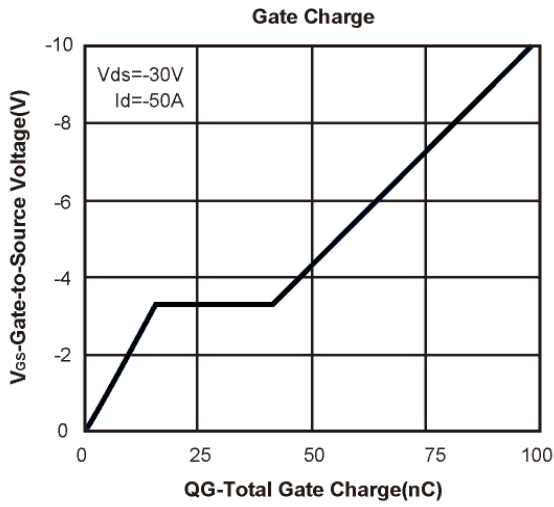
Electrical Characteristics ($T_c = 25^\circ\text{C}$ Unless Otherwise Specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-60			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1		-3	V
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-60V, V_{GS}=0V$			-1	μA
$R_{DS(ON)}$	Drain-Source On-State Resistance ^a	$V_{GS}=-10V, I_D=-20A$		17	19	m Ω
		$V_{GS}=-4.5V, I_D=-20A$		19	20.5	
V_{SD}	Diode Forward Voltage	$I_S=-30A, V_{GS}=0V$		-1.0	-1.5	V
DYNAMIC						
Q_g	Total Gate Charge	$V_{DS}=-30V, V_{GS}=-10V, I_D=-50A$		98.6		nC
Q_g	Total Gate Charge	$V_{DS}=-30V, V_{GS}=-4.5V, I_D=-50A$		50.1		
Q_{gs}	Gate-Source Charge			15.9		
Q_{gd}	Gate-Drain Charge			25.2		
C_{iss}	Input capacitance	$V_{DS}=-15V, V_{GS}=0V, F=1MHz$		4480		pF
C_{oss}	Output Capacitance			427		
C_{rss}	Reverse Transfer Capacitance			355		
$t_{d(on)}$	Turn-On Delay Time	$V_{DS}=-30V, R_L=30\Omega$ $V_{GEN}=-10V, R_G=6\Omega$		50.7		ns
t_r	Turn-On Rise Time			18.1		
$t_{d(off)}$	Turn-Off Delay Time			221		
t_f	Turn-Off Fall Time			60.1		

 Notes:a. Pulse test; pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

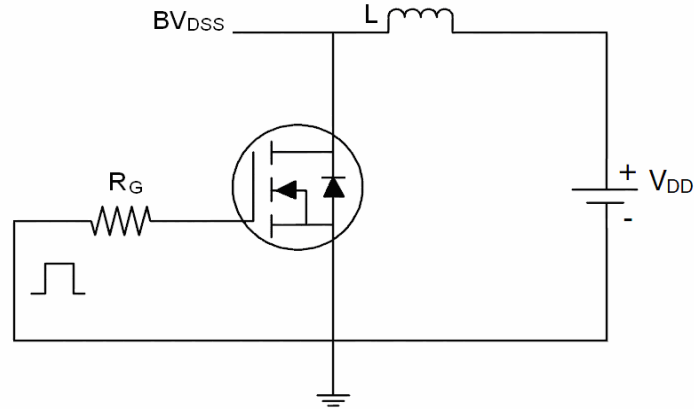
b. Matsuki Electric/ Force mos reserves the right to improve product design, functions and reliability without notice.

Typical Characteristics (T_J = 25°C Noted)


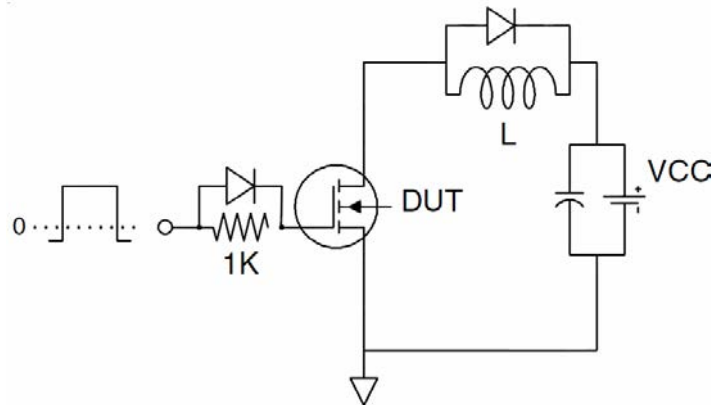
Typical Characteristics (T_J = 25°C Noted)


Test Circuit

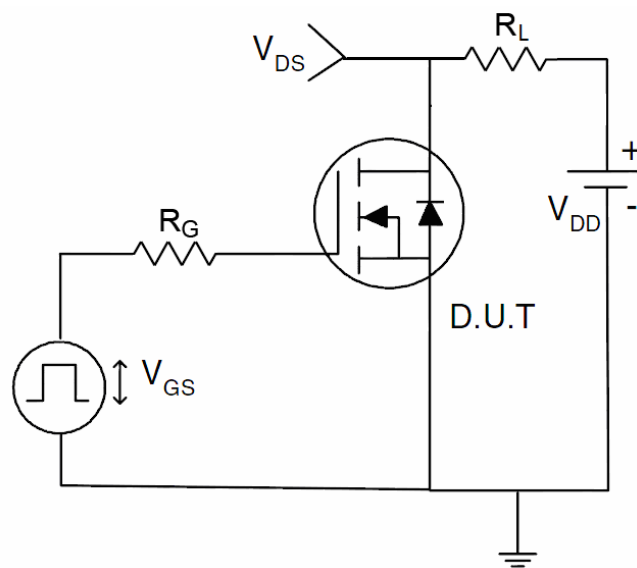
1) A_S test Circuit



2) Gate charge test Circuit



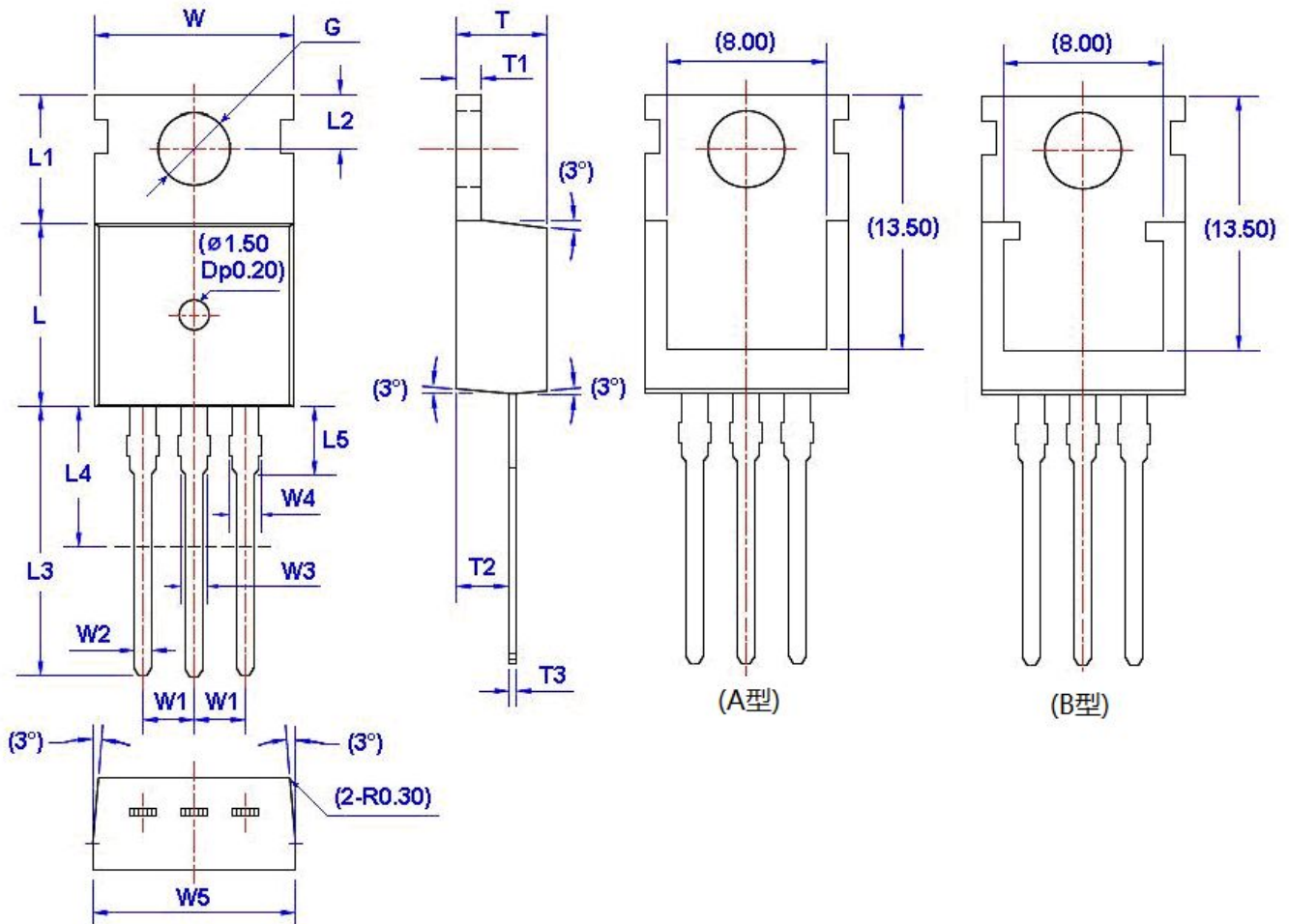
3) Switch Time Test Circuit



Package Dimension

TO-220

Unit:mm



Symbol	Size		Symbol	Size		Symbol	Size		Symbol	Size	
	Min	Max		Min	Max		Min	Max		Min	Max
W	9.66	10.28	W5	9.80	10.20	L4**	6.20	6.60	T3	0.45	0.60
W1	2.54 (TYP)		L	9.00	9.40	L5	2.79	3.30	G(Φ)	3.50	3.70
W2	0.70	0.95	L1	6.40	6.80	T	4.30	4.70			
W3	1.17	1.37	L2	2.70	2.90	T1	1.15	1.40			
W4*	1.32	1.72	L3	12.70	14.27	T2	2.20	2.60			