




Power MOSFETS

DATASHEET

LM20E80TGF6A

Dual P-Channel
Enhancement Mode MOSFET

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Quality Management Systems

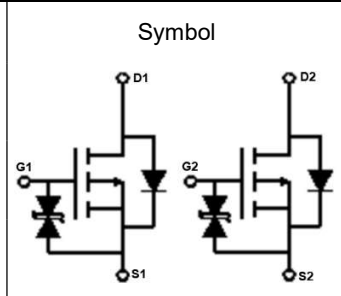
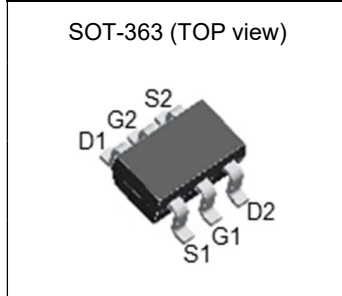
ISO 9001:2015 Certificate

LM20E80TGF6A



Dual P-Channel Enhancement Mode MOSFET

Pin Description



Ordering Information

Symbol	Dual P-Channel	Unit
V_{DSS}	-20	V
$R_{DS(ON)-Max}$	590	mΩ
I_D	-0.53	A

Feature

- Reliable and Rugged
- ROHS Compliant & Halogen-Free
- ESD Protection

Applications

- Power Management in DC/DC Converters
- Load Switch

Ordering Information

Orderable Part Number	Package Type	Form	Shipping	Marking
LM20E80TGF6A	SOT-363	Tape & Reel	3000 / Tape & Reel	2□□□

Note : □□□ = Lot Code

Absolute Maximum Ratings (T_J=25°C Unless Otherwise Noted)

Symbol	Parameter	Dual P-Channel	Unit	
V_{DSS}	Drain-Source Voltage	-20	V	
V_{GSS}	Gate-Source Voltage	±12		
T_J	Maximum Junction Temperature	150	°C	
T_{STG}	Storage Temperature Range	-55 to 150	°C	
I_S	Diode Continuous Forward Current	$T_A=25^\circ C$	-0.23	A
$I_{DM}^{①}$	Pulse Drain Current Tested	$T_A=25^\circ C$	-0.9	A
$I_D^{②}$	Continuous Drain Current	$T_A=25^\circ C$	-0.53	A
		$T_A=70^\circ C$	-0.42	
P_D	Maximum Power Dissipation	$T_A=25^\circ C$	0.25	W
		$T_A=70^\circ C$	0.16	

Thermal Characteristics

Symbol	Parameter	Rating	Unit	
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	Steady State	500	°C/W

Note ① : Max. current is limited by Bonding wire

Note ② : UIS tested and pulse width are limited by maximum junction temperature 150°C

Note ③ : Device mounted on an FR4 PCB, single-sided copper , tin-plated and standard footprint.

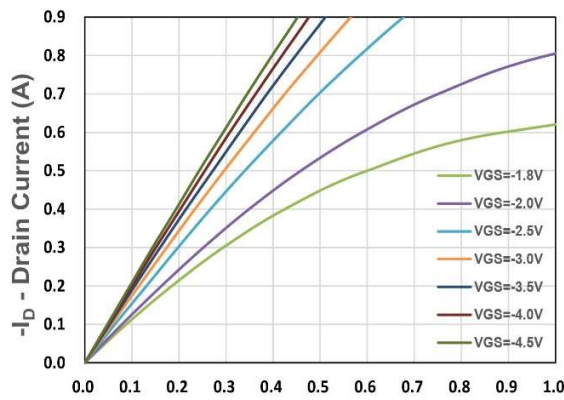
Dual P-Channel Electrical Characteristics (T_J=25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Electrical Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250uA	-20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-16V, V _{GS} =0V	-	-	-1	uA
V_{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250uA	-0.5	-0.75	-1	V
I_{GSS}	Gate Leakage Current	V _{GS} =±12V, V _{DS} =0V	-	-	±10	uA
R_{DS(ON)} ^④	Drain-Source On-state Resistance	V _{GS} =-4.5V, I _{DS} =-0.6A	-	490	590	mΩ
		V _{GS} =-2.5V, I _{DS} =-0.5A	-	610	830	
		V _{GS} =-1.8V, I _{DS} =-0.4A	-	1000	1500	
gfs	Forward Transconductance	V _{DS} =-3V, I _{DS} =-0.3A	-	1	-	S
Dynamic Characteristics ^⑤						
C_{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-10V, Freq.=1MHz	-	58	-	pF
C_{oss}	Output Capacitance		-	5.7	-	
C_{rss}	Reverse Transfer Capacitance		-	4.4	-	
t_{d(ON)}	Turn-on Delay Time	V _{GS} =-4.5V, V _{DS} =-10V, I _D =-1A, R _{GEN} =3Ω	-	0.4	-	nS
t_r	Turn-on Rise Time		-	0.03	-	
t_{d(OFF)}	Turn-off Delay Time		-	0.04	-	
t_f	Turn-off Fall Time		-	1.1	-	
Q_g	Total Gate Charge	V _{GS} =-2.5V, V _{DS} =-10V I _D =-0.55A	-	0.6	-	nC
Q_g	Total Gate Charge	V _{GS} =-4.5V, V _{DS} =-10V, I _D =-0.55A	-	1.1	-	
Q_{gs}	Gate-Source Charge		-	0.17	-	
Q_{gd}	Gate-Drain Charge		-	0.18	-	
Source-Drain Characteristics						
V_{SD} ^④	Diode Forward Voltage	I _{SD} =-0.3A, V _{GS} =0V	-	-0.8	-1.1	V
t_{rr}	Reverse Recovery Time	I _F =-1A, V _R =0V	-	9.2	-	nS
Q_{rr}	Reverse Recovery Charge	dI _F /dt=100A/μs	-	0.81	-	nC

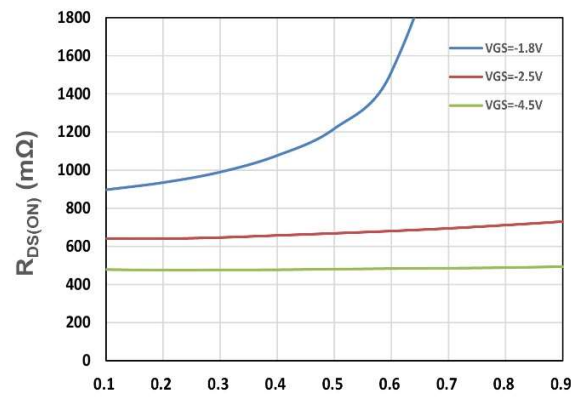
Note ④ : Pulse test (pulse width 300us, duty cycle 2%).

Note ⑤ : Guaranteed by design, not subject to production testing

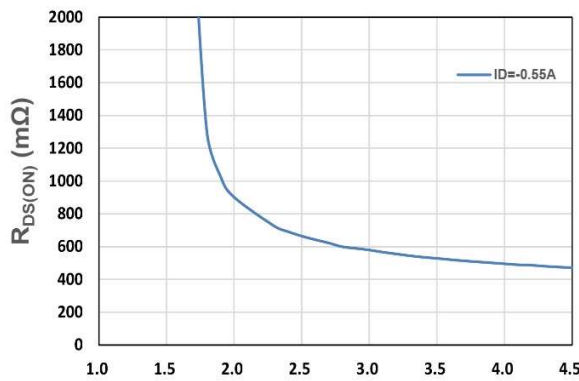
P-Channel Typical Characteristics



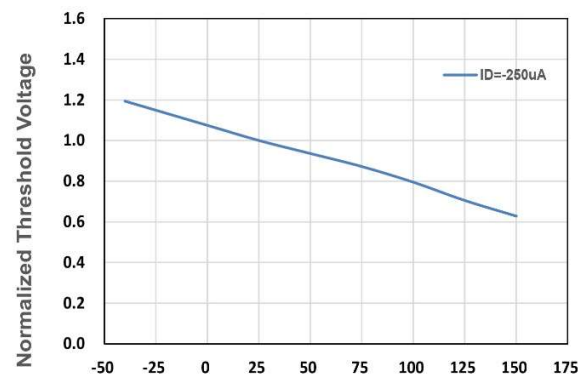
-V_{DS} - Drain - Source Voltage (V)
Figure 1. Output Characteristics



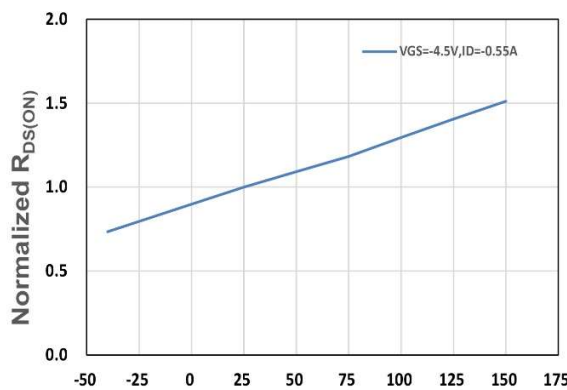
-ID - Drain Current (A)
Figure 2. On-Resistance vs. ID



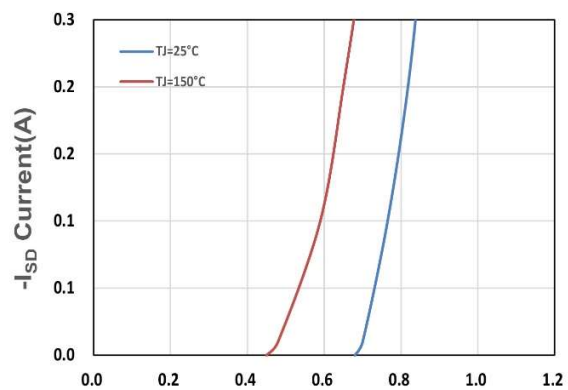
-V_{GS} - Gate - Source Voltage (V)
Figure 3. On-Resistance vs. VGS



T_j, Junction Temperature(°C)
Figure 4. Gate Threshold Voltage

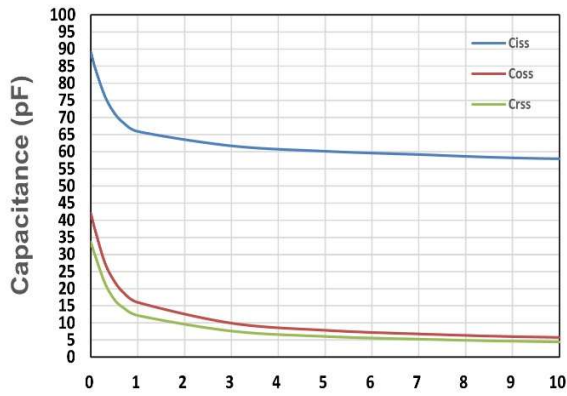


T_j, Junction Temperature(°C)
Figure 5. Drain-Source On Resistance

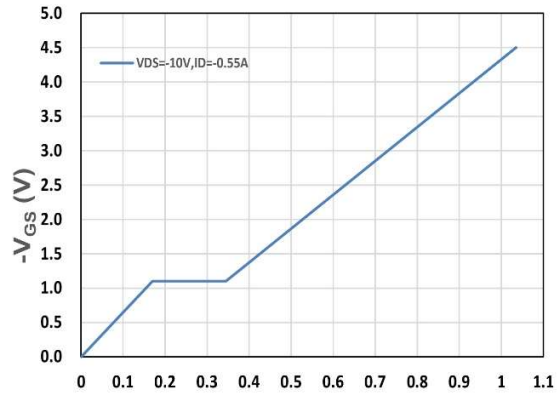


-V_{SD}, Source-Drain Voltage(V)
Figure 6. Source-Drain Diode Forward

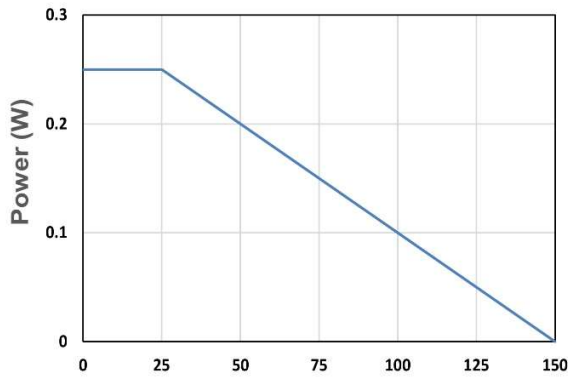
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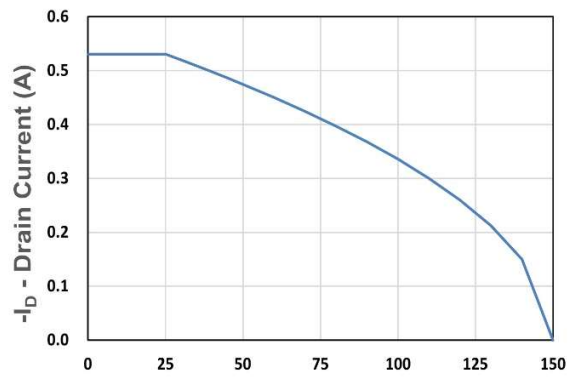
$-V_{DS}$ - Drain - Source Voltage (V)
Figure 7. Capacitance



Q_g , Total Gate Charge (nC)
Figure 8. Gate Charge Characteristics



T_A - Ambient Temperature (°C)
Figure 9. Power Dissipation



T_A - Ambient Temperature (°C)
Figure 10. Drain Current

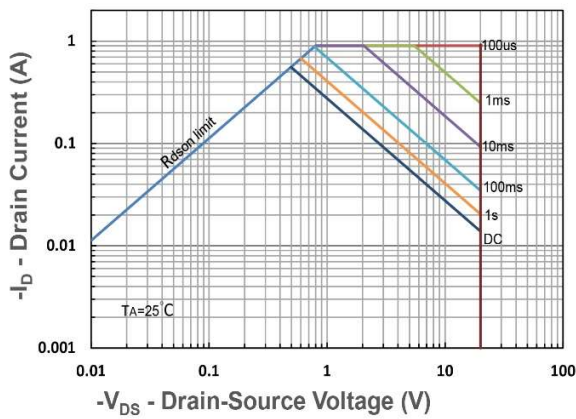


Figure 11. Safe Operating Area

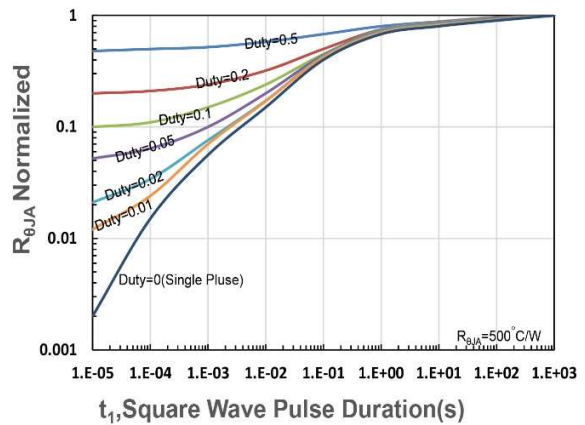


Figure 12. $R_{\theta Jc}$ Transient Thermal Impedance